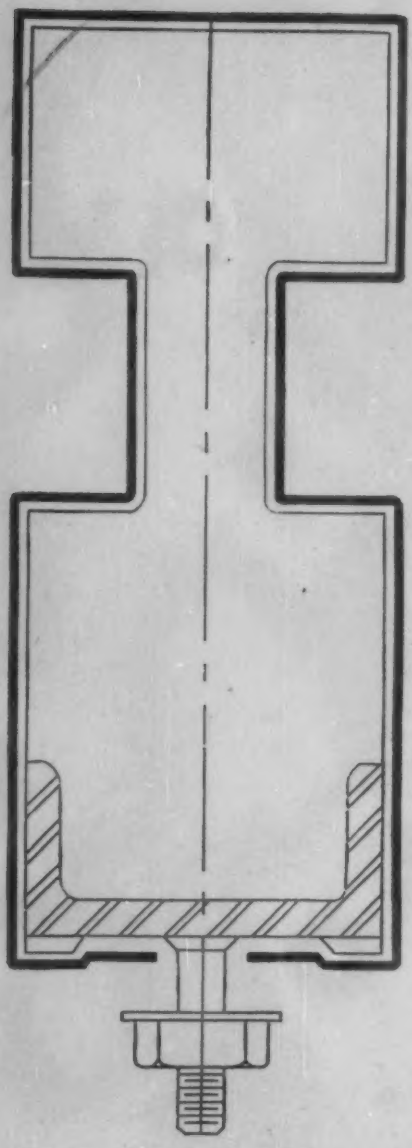

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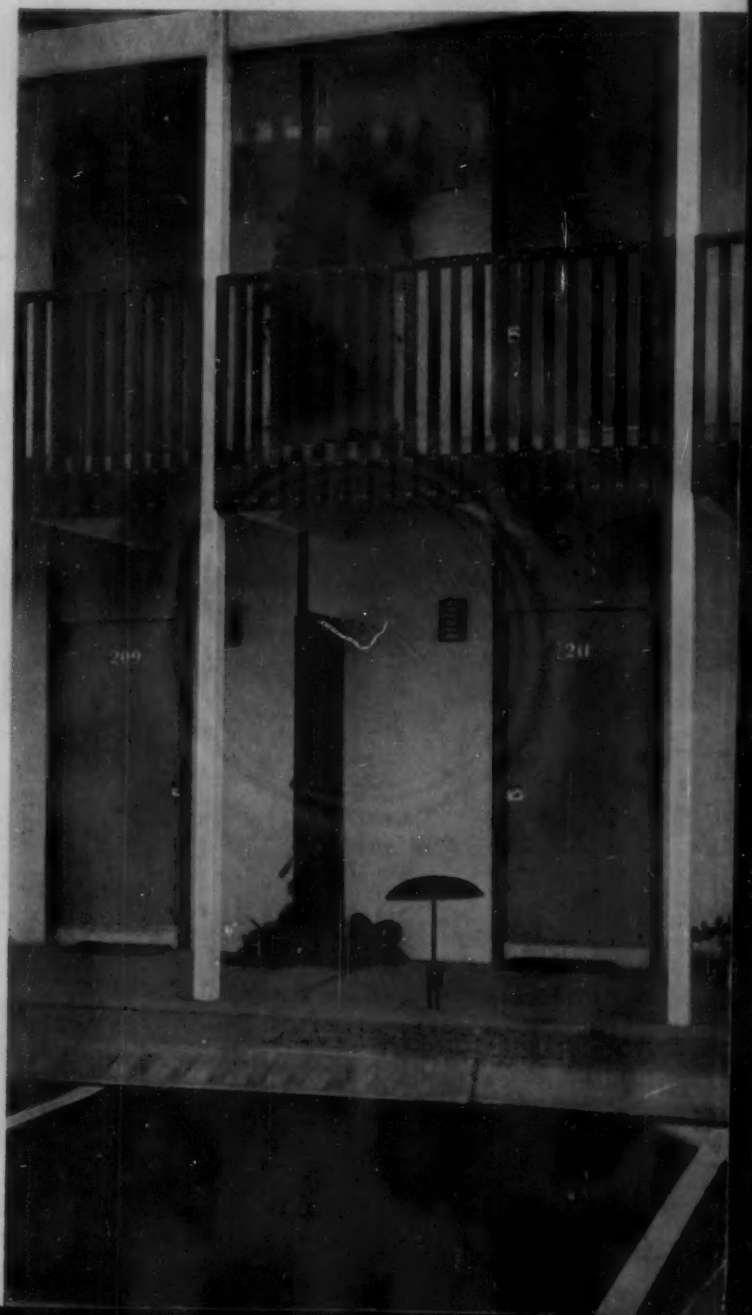

without Sprinklers

Fire struck at night in this large, unsprinklered, one-story department store. By the time fire apparatus arrived, the blaze was completely out of control. Loss: estimated at $1,000,000.00.

Fighting Fire...

with Sprinklers

A flash fire occurred over a weekend in basement of J. C. Penney Company, Sacramento, California. Fast action by Grinnell Sprinklers was credited with saving this $3,500,000.00 department store.

There's small chance of fire ever gaining real headway in a Grinnell-protected building. Today's Grinnell Spray Sprinklers give more effective protection in extinguishing fire than ever before available . . . the result of years of research, design improvement, and careful manufacture.

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MANUFACTURING, ENGINEERING, AND INSTALLATION OF AUTOMATIC SPRINKLERS SINCE 1878

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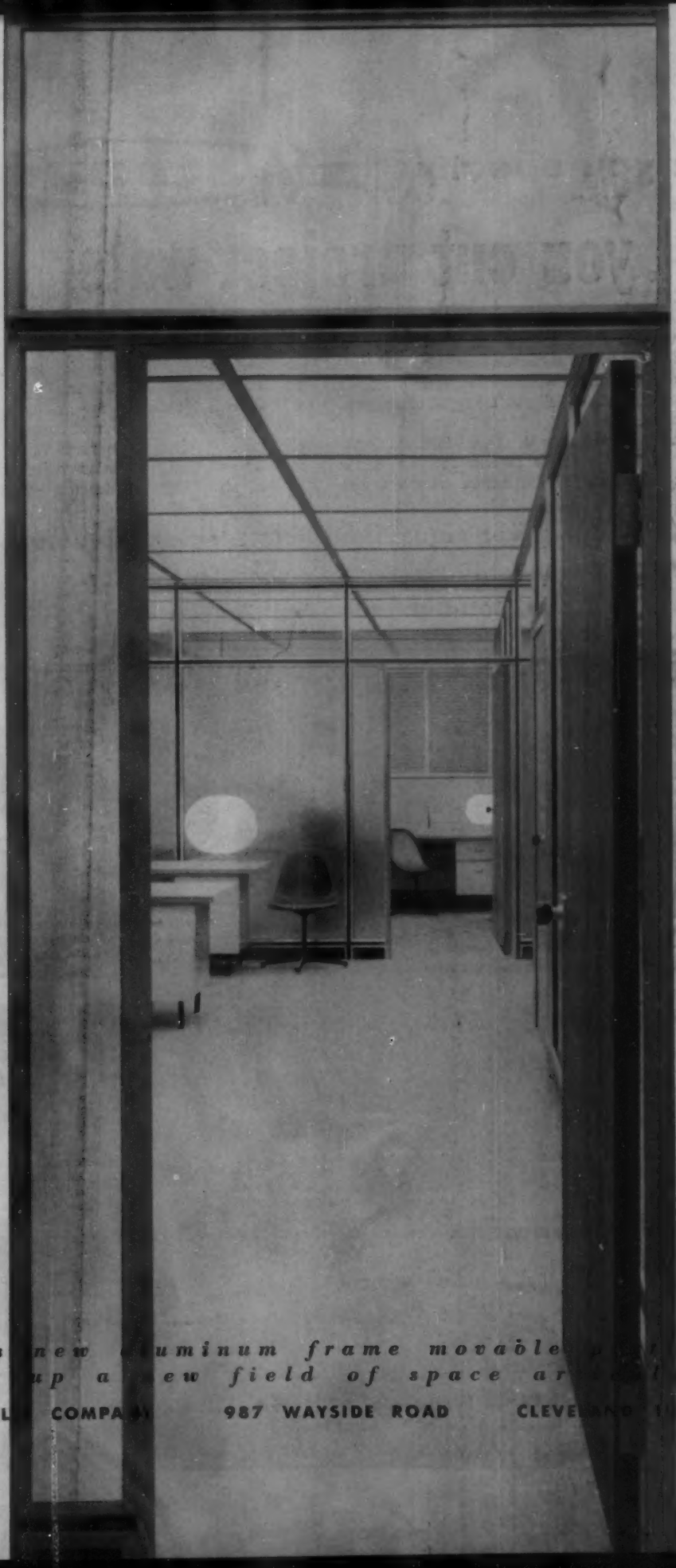

mills new aluminum frame movable partitions
open up a new field of space articulation

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Watrous sets the standard for trouble-free installations . . . convenience, low maintenance, looks and performance. And Imperial Watrous flush valves install easily on all types and makes of fixtures.

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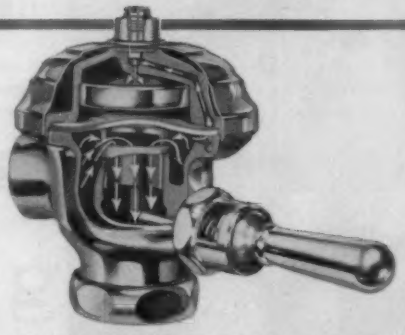
Wide choice of hand- and foot-operated diaphragm and piston-type flush valves available for exposed and concealed installation. And look at all of these Watrous features:

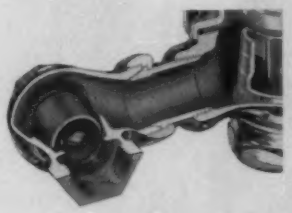
★ **Water-saver adjustment** ★ **Single-step servicing**

★ **Self-cleansing by-pass** ★ **Silent action**

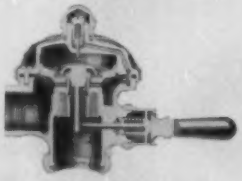
★ **Self-tightening handle packing**



Self-cleansing by-pass guards against dirt or sediment in water. Thoroughly cleans by-pass orifice each time flush valve is actuated.

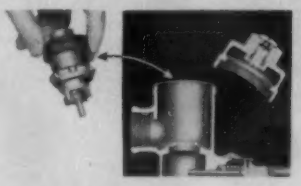


Silent action design eliminates objectionable line, shut-off and closing noises. Substantially reduces bowl noise. Optional.



Self-tightening handle packing prevents leakage. Handle spring maintains tension. Eliminates periodic re-tightening.

Single-step servicing — diaphragm type. Entire operating unit of diaphragm type flush valve can be replaced in minutes, without taking valve off the line.



Single-step servicing — piston-type. As with diaphragm-type flush valve, the piston-type can be quickly serviced by replacing the operating unit — in minutes.

IMPERIAL Watrous

The IMPERIAL BRASS MFG. CO.

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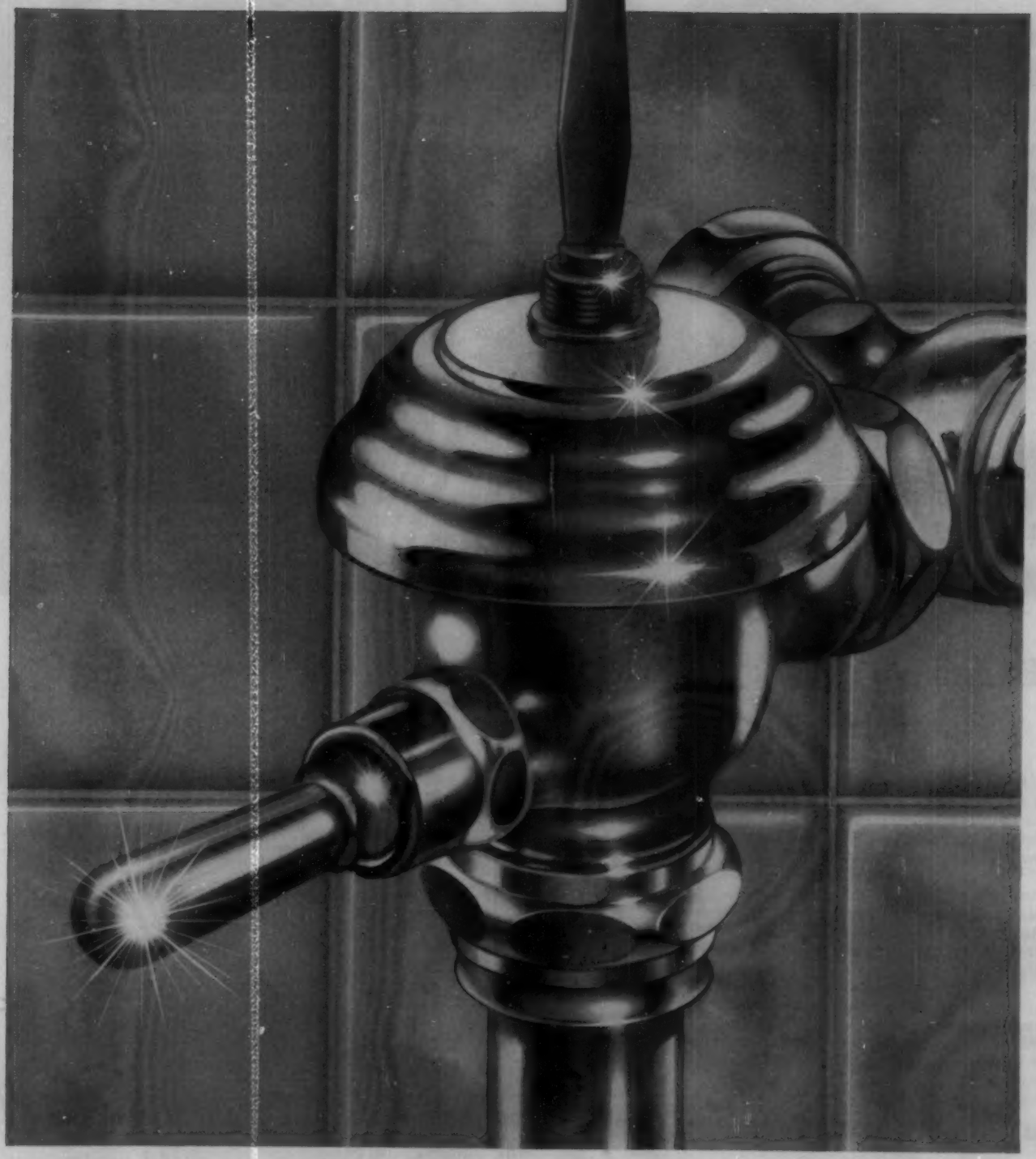
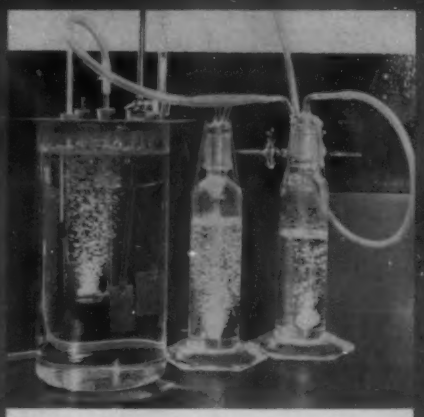
ADJUSTABLE FLUSH VALVES BOTH DIAPHRAGM AND PISTON TYPES

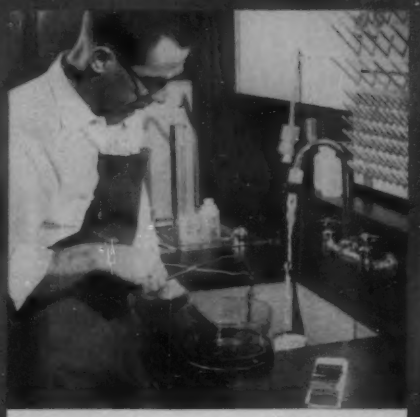
$$$$ per flush valve per year



1 Analytical weighing of specimens prior to testing



2 Steam condensate corrosion test



3 Cleaning specimens with inhibited hydrochloric acid

4 Second analytical weighing to determine corrosion weight loss

5 Calculation and statistical analysis of laboratory test results

6 Final examination of specimens under low power magnification

Extensive testing program proves new 4-D Wrought Iron more corrosion-resistant than ferrous substitutes

Test results from the Byers Research Laboratory lend documentary support to the superiority of new 4-D Wrought Iron—over standard Wrought Iron as well as ferrous substitutes.

Convincing case-history service records are now further substantiated by the conclusive findings of our metallurgical staff. Some typical results of this testing program are presented in the chart at right.

The Byers field service representative will be pleased to relate these test results to your corrosive applications. Write us for helpful literature on new 4-D Wrought Iron. A. M. Byers Company, Clark Building, Pittsburgh 22, Pennsylvania.

BYERS WROUGHT IRON

Comparative Analysis of 4-D Wrought Iron Corrosion Tests

Tests	4-D Wrought Iron	Standard Wrought Iron	Ferrous Substitutes
Severe industrial atmospheric continued exposure 17 years	Corrosion weight loss 540 grams/sq. ft.	Corrosion weight loss 655 grams/sq. ft.	Not included in test
Steam condensate return line	*At least 25% greater corrosion-resistance than standard Wrought Iron	No failures 10 years (still in service)	Complete failure after 2 years
Aerated salt water—5 weeks (Short term test—points indicate 4-D Wrought Iron curve flattening out at much lower rate of attack)	Corrosion weight loss 146 mg/sq. in.	Corrosion weight loss 170 mg/sq. in.	Corrosion wt. loss 226 mg/sq. in.
Brine piping	*At least 25% greater corrosion-resistance than standard Wrought Iron	No failures 23 years (still in service)	Complete failure after 7 years
Salt water, Gulf of Mexico ¼ inch plate—17 years	Corrosion weight loss 4 mils/years (minimum plate thickness now $\frac{3}{16}$") Still in excellent condition	Not included in test	Corrosion weight loss 30 mils/years; plate badly pitted, perforated
Downspout	*At least 25% greater corrosion-resistance than standard Wrought Iron	No failures in 29 years (Still in service)	Complete failure after 18 years

*In this application no long term test data yet available on 4-D Wrought Iron. Results shown are derived from short term tests.

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Right: Dinah's Motor Hotel, Palo Alto, Calif.; Campbell & Wong, Architects. Roger Sturtevant photo.
Left: Mullion detail, Inland Steel Building, Chicago, Ill.; Skidmore, Owings & Merrill, Architects and Engineers

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April 1958 Vol. 123 No. 4

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BUILDING TYPES STUDY: SCHOOLS

A wide range of high school designs, with especial reference to development of the total building program, the various schemes starting with multi-story buildings and going through campus plans.

WRIGHT'S OUTPUT IS EXPANDING

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FIRST COMES SPRING, THEN SWIMMING

A group of distinctly fun things having something to do with swimming: three public beach developments and an idea-full house design by one of the promising young architects.

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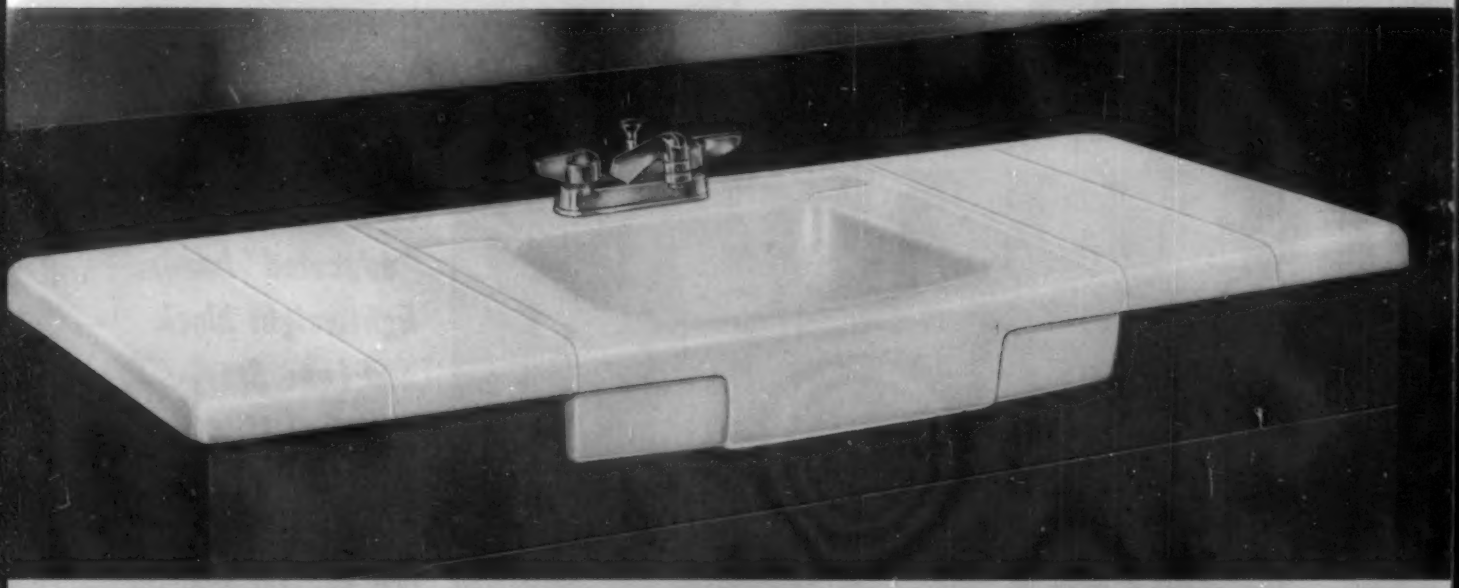

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People Want Castles

The recipient of the first Pan-Pacific Architectural Citation (see page 28), Kenzo Tange of Japan, had some undoctrinaire comments to make on the relationship between modern architecture and the traditional architecture of his own country in a talk he gave at the University of Hawaii while he was in Honolulu. "They say modern architecture and Japanese traditional architecture have common characteristics—simplicity, standardization, openness, spaciousness and lightness. These characteristics may be true, I think, but partly true, not completely true. Simplicity or standardization means sometimes weakness, yes weakness, for example, against weather and climate. I have seen many houses, many fine, wonderful houses in Hawaii and I think, I am personally thinking, Japanese traditional architecture should be more and more suitable for your climate rather than our own because we have very severe wintertime, you know. Now lightness or openness or spaciousness in the physical and psychological meaning cannot satisfy people's energy or desires. People want castles where they live in. They want castles where they work in. They do not want weakness or tentativeness, but this weak and tentative feeling that we have in our tradition sometimes appears in the so-called modern architecture of the world. Architecture always should be a reflection or expression of social structure. Social structure, I think, means social institutions, economical situations, levels of technical standards, way of living, or way of thinking. This structure should not be considered static, but dynamic—always advancing forward from the past to future. So I think we have to catch the realities of this structure in this point between past and future. This advancing structure, this advancing social structure, has some kind of energy inside, otherwise it cannot move itself. I think this energy is hidden or sleeping in the people's bodies and minds, but they do not recognize this energy in themselves. They only seek something, but they do not know what this something is that they are seeking. So, we have to give the image to the people's desires. In order to find new solutions to satisfy the people's desires or energy, I myself and other younger generation in our country are striving to overcome our traditional weakness and so-called modernism by trying to create new spaces and forms more suitable to their energy. . . . Contemporary architecture might be real reflection or expression of a natural climate condition and social structure and techniques. So function and expression of architecture should be different according to each condition of various country or regions."

Architecture the Social Art

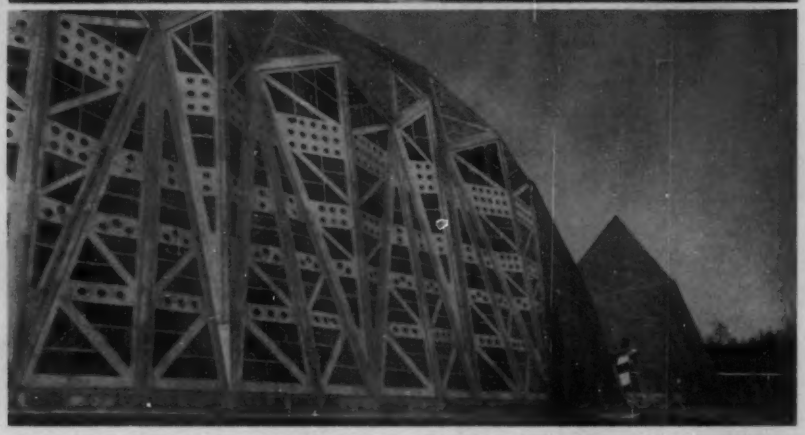
A sociologist's view of the social significance of architecture as an art was given by George A. Lundberg, professor of sociology at the University of Washington, in an address at a recent meeting of the Southern California Chapter of the A.I.A. The social significance of the engineering component of architecture, said Professor Lundberg, "is relatively clear and generally recognized"; not so the artistic component. "Architecture touches every individual and at all periods of his life span. Its provision from the beginning to the end of life engages a major portion of man's time and of his resources. It may be a determining factor in his whole standard of living, his attitudes and his way of life. That architecture which gives man the maximum return in status is to him the most functional and utilitarian and beautiful. The social significance of architecture is to reconcile the often contradictory and absurd currents of human craving, need, longing, striving, ambition, aspiration and desire. Here the social scientist may be important at least in pointing out what are mutually contradictory and exclusive aspirations. Out of this chaos perhaps the architect can work out some kind of order which will salvage for man a maximum of realization of his deepest and most permanent longings." To achieve this, Professor Lundberg declared, architects will have to strengthen their "artistic authority," and this will require them increasingly to justify their artistic ideas on scientific grounds. This eventually depends in turn on increasing research as to what are the human and social correlates of particular artistic, including architectural, forms."

Decorators are Designers

The term "interior designer and decorator" has officially replaced "interior decorator" in U. S. Department of Labor parlance. The Department's Bureau of Labor Statistics publishes the following definition: "One who designs, plans and furnishes interiors of houses, commercial and institutional structures, hotels, clubs, ships, theaters, as well as set decorators for motion picture arts and television . . . makes drawings and plans of rooms showing placement of furniture, floor coverings, wall decorations . . . determines color or scheme . . . furnishes complete cost estimates for the client's approval . . . makes necessary purchases, places contracts, supervises construction, installation, finishing and placement of furniture, fixtures and other correlated furnishings, and follows through to completion of project." The executive secretary of the American Institute of Decorators, William D. Hamilton, observing that "confusion has existed regarding the term 'interior decorator'," said "government recognition of the designation interior designer will . . . help the general public to a better understanding of the profession."

Unobtainium

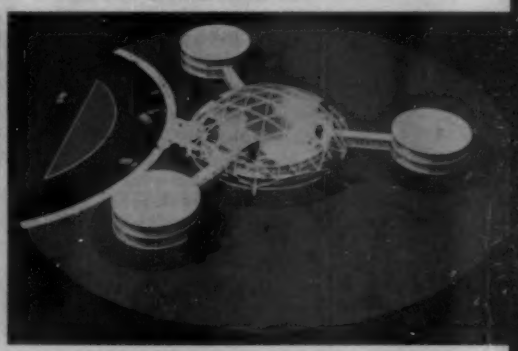
A word that architects or *anybody* ought to find ready use for has turned up in a space-age lexicon recently published by the Documentary Research Institute of the Air University at Maxwell Air Base, Ala. The word is "unobtainium," defined, with what the glossary solemnly describes as humor or irony, as a substance that either theoretically cannot exist or that cannot be produced because technology is not sufficiently advanced.



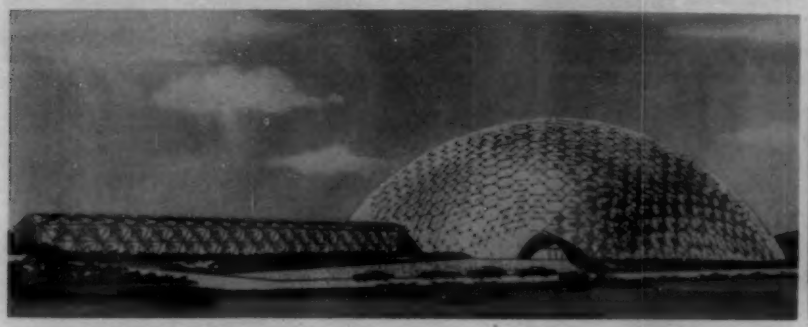
Sanctuary of First Presbyterian Church, Stamford, Conn., dedicated last month, was designed by architect Wallace K. Harrison of Harrison and Abramovitz, with Felix J. Samuely of London as consulting engineer, Edwards and Hjorth as structural engineers, Gabriel Loire of Chartres as creator of the stained glass and Bolt, Beranek and Newman as acoustical consultants. Structure (AR, Nov. 1957, pages 221-222) is both support and enclosure, its shape inspired by the ancient Christian symbol of the fish. It is 234 ft long, 54 ft wide and 60 ft high, with an area of 11,500 sq ft. The nave seats 670

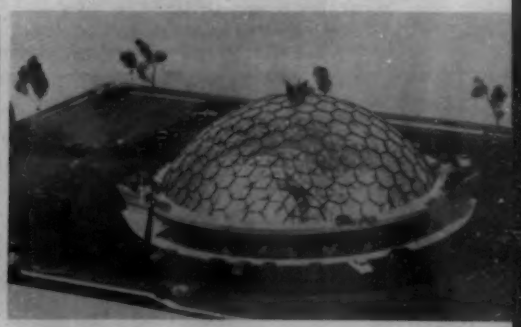
Parish unit of the church, designed by architect Willis Mills of Sherwood, Mills and Smith, provides social and educational facilities for a congregation of nearly 2000 adults and 1000 children. Fellowship Hall (right in photograph above) is used for lectures, dinners and public events, accommodates 300 to 500 people. The building, of fieldstone and glass, has its own chapel, with a window behind the altar (below) designed by Matthew Wysocki and executed by Loire

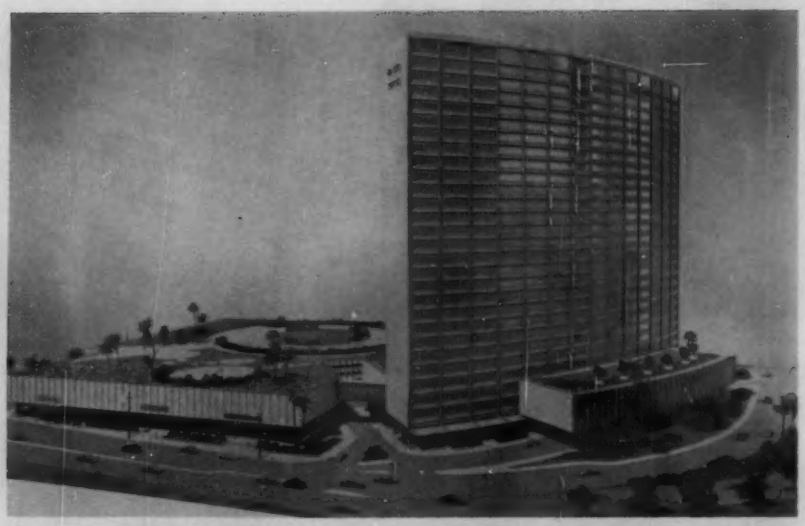
Pittsburgh Auditorium, with a retractable roof 415 ft in diameter, will be built on 22-acre site which is part of city's 95-acre Redevelopment Area No. III (adjoining the Golden Triangle to the north). Mitchell and Ritchey are architects; Ammann and Whitney structural engineers. The auditorium, to have maximum seating capacity of 13,640, is designed as multi-purpose structure for "sports and spectacles," opera, exhibitions, and conventions. Roof made of eight sections, six of them movable, rises from concrete ring girder, is supported at pivot point in dome center; it will open or close in under 3 minutes



Above: Proposed airport hotel for Memphis; the architects, Wadlington and Marshall, call it a "flightel." Basic concept of central control building with connecting satellites decentralizes for maximum privacy and view and facilitates future expansion. Open web reinforced concrete dome with transparent plastic skin is safety device, all-weather shelter for rooftop recreation area, and noise buffer for sleeping rooms. Below left: Fuller's geodesic dome in steel, 375 ft in diameter (biggest ever) and 116 ft high, under way in Baton Rouge as car repair shop for Union Tank of Chicago. Below: gold aluminum dome designed by Kaiser Aluminum and Chemical for Citizens State Bank, Oklahoma City; architects, Bailey, Bozalis, Dickinson & Roloff

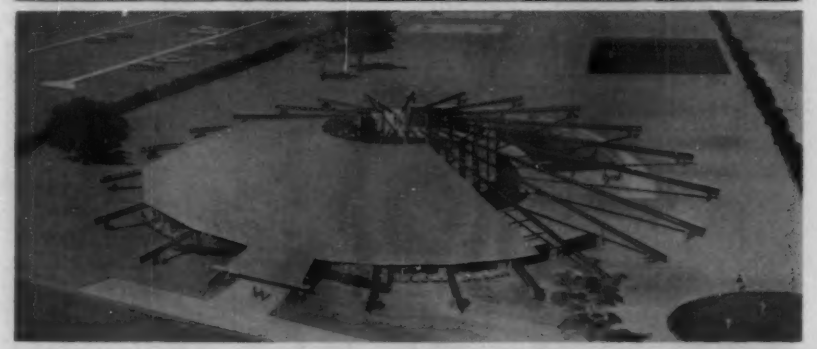






KAISER CENTER—A $45 million world headquarters for Kaiser Industries Corporation will be built on a seven-acre site in downtown Oakland; Welton Becket & Associates are the architects. The center, with a gross area of 1,650,000 sq ft, will include a 28-story office building (976,000 sq ft gross area, 802,000 net usable) and a shop and parking structure with parking for 1200 cars. Exteriors: gold and gray aluminum and glass

EMPIRE CENTRAL (right)—On a 90-acre site four miles from downtown Dallas, a new concept in site development for office and professional buildings; developers—Windsor Properties Inc.; planning consultants—architect Donald S. Nelson, consulting engineer Edward L. Wilson Jr. and landscape architect Joe O. Lambert. Besides the kind of benefits familiar from industrial district practice, office site purchasers will share such employe facilities as the "Empire Club" (circular building at right; George L. Dahl, architect) and a shopping center. Investment is expected ultimately to reach $27 million, providing for some 11,000 occupants 1,580,000 sq ft of floor area with parking for 5300 cars



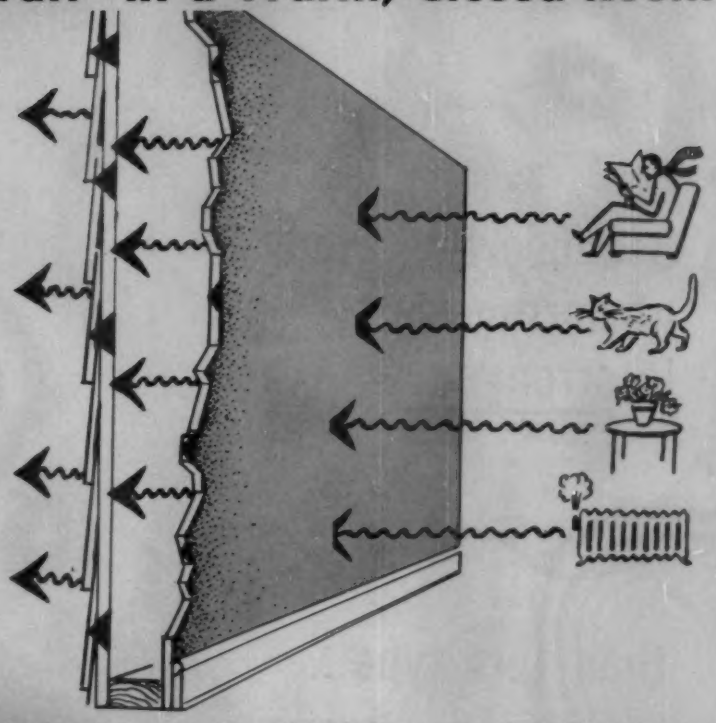
MONSANTO HEADQUARTERS—New general offices of Monsanto Chemical Company (AR, Feb. 1956, page 10), on a 252-acre site in St. Louis County, Mo.; Vincent Kling, Architect. Shell-roofed structure is executive building; in right foreground (below) laboratory (Holabird & Root & Burgee, Architects) completed earlier last year.

Ever Feel a "Draft" in a Warm, Closed Room?

(RADIATION is the transmission through space of invisible heat rays. They have no temperature, only energy. When absorbed by a surface, their energy is transformed to HEAT. The surface of any object warmer than absolute zero—the Sun, You, Clothing, Wood, Plaster, an Iceberg, a Stove, a Chair, Paper, an Animal, will RADIATE to a colder surface.)

(CONDUCTION is the process by which a cooler object or particle is heated by direct physical CONTACT with a warmer one.)

(CONVECTION is the transfer of heat within air caused by the flow of the air itself.)



People often complain of "drafts" in a room with air-tight walls and windows. Why? To a large extent because, by Nature's law, warmth flows to cold by RADIATION as well as by CONDUCTION. Cold walls, too, draw heat out of contacting air by conduction, causing a downward current of cold air.

The exposed skin of people and the outer surfaces of their clothing lose heat as infra red heat rays flow from them with 90% emissivity to a cooler wall surface which has 93% absorptivity (and transforms the heat rays again to heat). If insulation is lacking, or has settled down, most of this heat is transmitted by radiation to the colder outer wall with 93% emissivity, absorbed, and then dissipated to the colder, outer air. So people are uncomfortable, perhaps only in spots. More fuel is then burned.

Multiple layers of aluminum in the wall space would retard convection; turn back heat rays with 97% reflectivity. When plaster is sufficiently warm, no net heat loss radiates from bodies to it; no current of cold air flows along the wall's surface. Comfort is maintained without unduly high temperatures or fuel costs.

In summer, the process is identical except for direction. Heat flow by radiation, conduction and convection is retarded by the multiple sheets of aluminum in the outer wall space. Interiors of rooms stay cooler, and the plaster surfaces are also often cooler than the body. Some heat would then *leave* the body for the colder wall surfaces, increasing body coolness and comfort.

You'll enjoy, as well as profit from reading Alexander Schwartz's recently published manual: "Heat Flow by Radiation in Buildings, Simplified Physics." The scientific background of heat flow, specific information on how to control it, data on the various types of multiple aluminum insulation, ratings of insulation performance, and installation techniques under many conditions are interestingly discussed in this liberally illustrated 48 page manual. A FREE copy is yours for the asking.

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TYPE 5	C.081=4"	C.034=9⅛"	9¢ sq. ft.
TYPE 6	C.068=4⅛"	C.034=9⅛"	10¢ sq. ft.
TYPE 9	C.043=**7¾"**	C.029=**11¼"**	15¢ sq. ft.

Types 1, 2, 7, 8 also available

*Determined by method of National Bureau of Standards in H.H.F.A. Research Paper 32.
†Calculated on basis of limiting thermal values cited in Fed. Specs. LLL-f-321b; HH-I-585; HH-I-521c; HH-I-551a.
‡Approximate cost, material and labor, new construction between wood joists.

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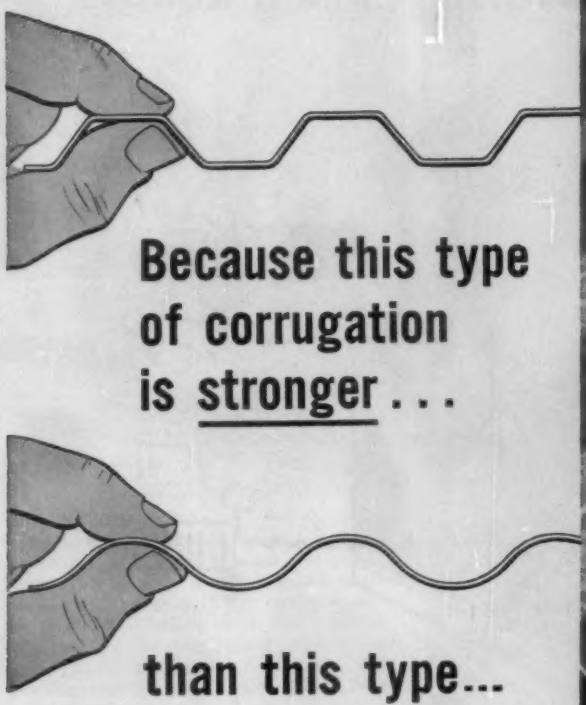

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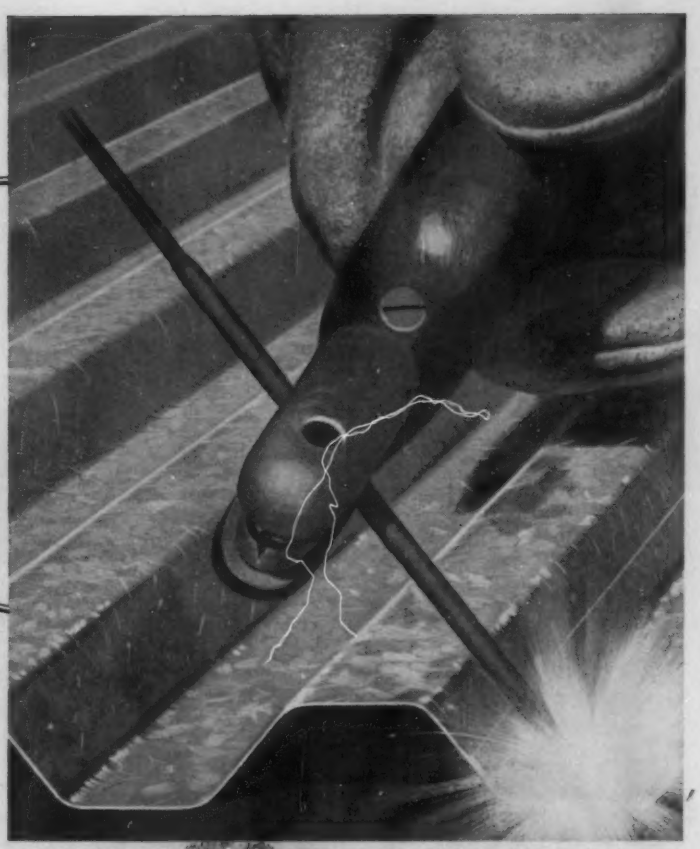
than this type...



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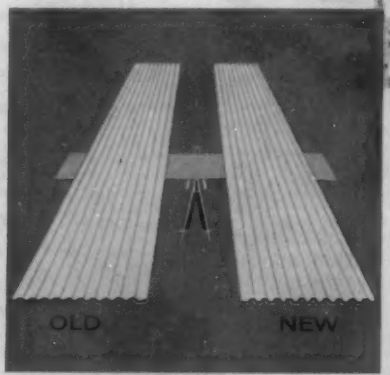
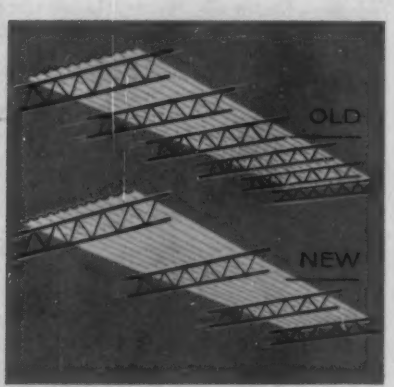


SAME WEIGHT. New Corruform strength results from *better design*. No increase in weight means no increase in price! Lightweight Corruform sheets are easy to handle.



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lengths up to 12 feet 3 inches. For spans from 3½ feet to 5 feet, *HEAVY-DUTY CORRUFORM* is available in lengths up to 18 feet 4 inches.

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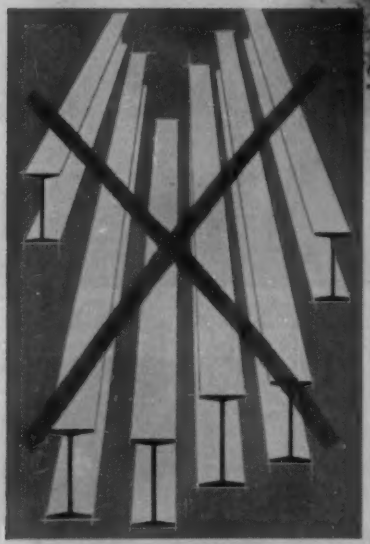

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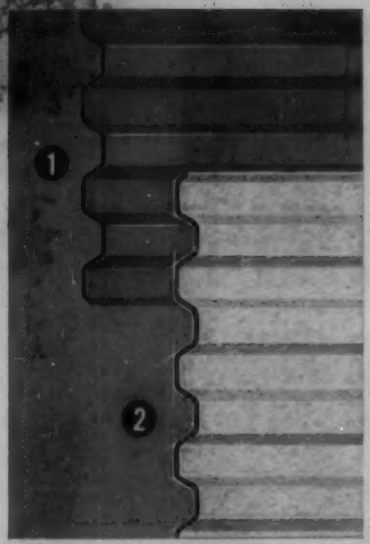

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FIVE BUILDINGS WIN AWARDS IN PENNSYLVANIA SOCIETY'S FIRST ARCHITECTURAL EXHIBIT

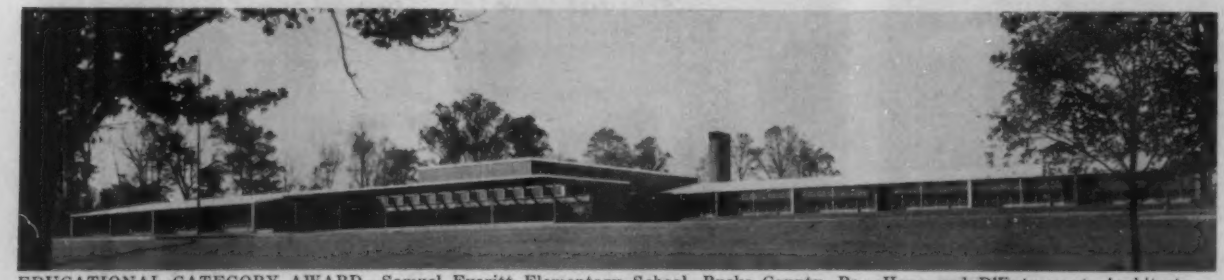
The Pennsylvania Society of Architects held its first competitive architectural exhibit in connection with its annual forum at Galen Hall, Wernersville, Pa., last fall. The buildings shown on this page were selected from approximately 90 submissions by a jury consisting of Paul Schweikher, head of the Department of Architecture, Carnegie Institute of Technology; G. Holmes Perkins, dean of the School of Architecture and Fine Arts, University of Pennsylvania; and architect I. M. Pei of New York. Also honored at the forum, with Certificates for Meritorious Service, were three former members of the State Board of Examiners of Architects: Charles T. Ingham, Henry Y. Shaub and Clement S. Kirby.

SILVER MEDAL AWARD (top award)—Kissam Lane Elementary School, Glen Head, Long Island, N.Y.; Vincent G. Kling, Architect

INSTITUTIONAL CATEGORY AWARD—Kent and Queen's Hospital, Chestertown, Md.; Eshbach, Pullinger, Stevens & Bruder

COMMERCIAL CATEGORY AWARD—Transportation Center, Philadelphia; Vincent G. Kling, Architect

INDUSTRIAL CATEGORY AWARD—Philadelphia Transport Company Building, Philadelphia; Thalheimer and Weits, Architects



EDUCATIONAL CATEGORY AWARD—Samuel Everitt Elementary School, Bucks County, Pa.; Haag and D'Entremont, Architects

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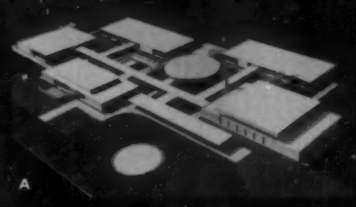

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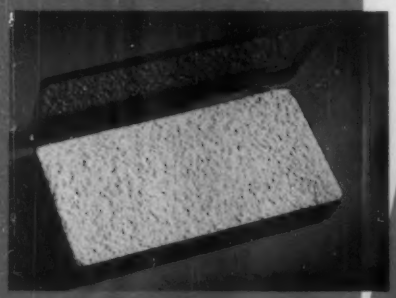

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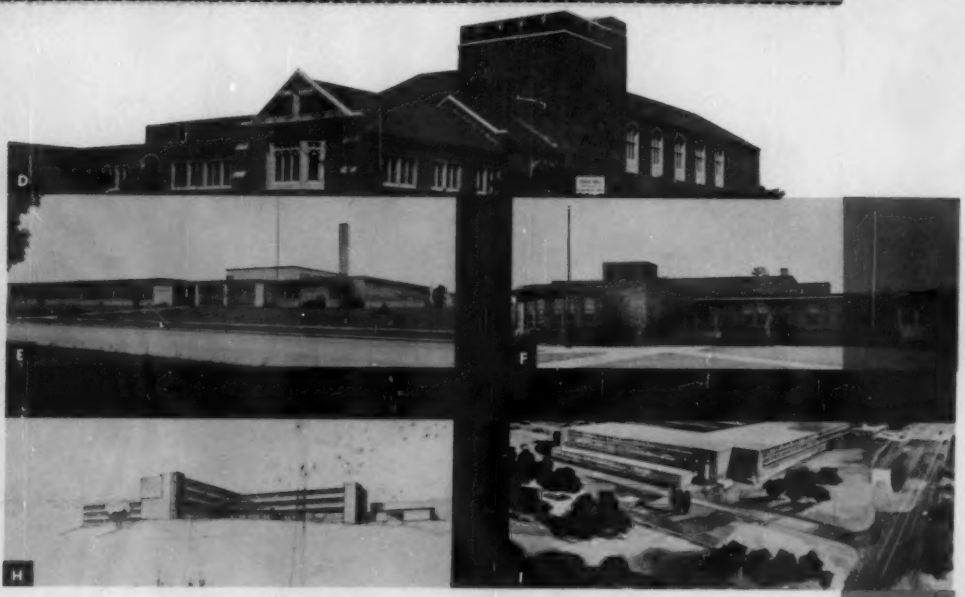

A.I.A. FILE NO. 39-B

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Philadelphia, Pa.

(B) WEST FRANKLIN ELEMENTARY SCHOOL
Claude W. Youst
Columbus, Ohio

(C) WESTGATE ELEMENTARY SCHOOL
Firestone & Motter
Canton, Ohio

(D) CORNELL UNIVERSITY
Rogers and Butler
New York, New York

(E) LINCOLN ELEMENTARY SCHOOL
Warren Holmes Company
Lansing, Michigan

(F) EMERSON ELEMENTARY SCHOOL
G. Donald Schade
Warren, Ohio

(G) ALVERNIA HIGH SCHOOL
Gaul & Voosen
Chicago, Ill.

(H) KENT STATE UNIVERSITY
Fulton & Dela Motte
Cleveland, Ohio

(I) EDINA-MORNINGSIDE JR. HIGH SCHOOL
Bissell & Belair
Minneapolis, Minn.

(J) TROY SCHOOL
Harrison & Mero
Troy, New York

(K) McKINLEY HIGH SCHOOL
Kling & Frost
Youngstown, Ohio

ALTA-VISTA ELEMENTARY SCHOOL
Sellew and Gremli
Sarasota, Florida

NORTHSIDE JUNIOR HIGH SCHOOL
Rudolph, Cooke & Van Leeuwen
Norfolk, Virginia

EAST AURORA HIGH SCHOOL
Pauly, Hauck & Welch
Buffalo, New York

MONROE-WOODBURY CENTRAL HIGH SCHOOL
Gordon S. Marvel
Newburgh, New York

SANDUSKY HIGH SCHOOL
McLaughlin and Kiel
Lima, Ohio

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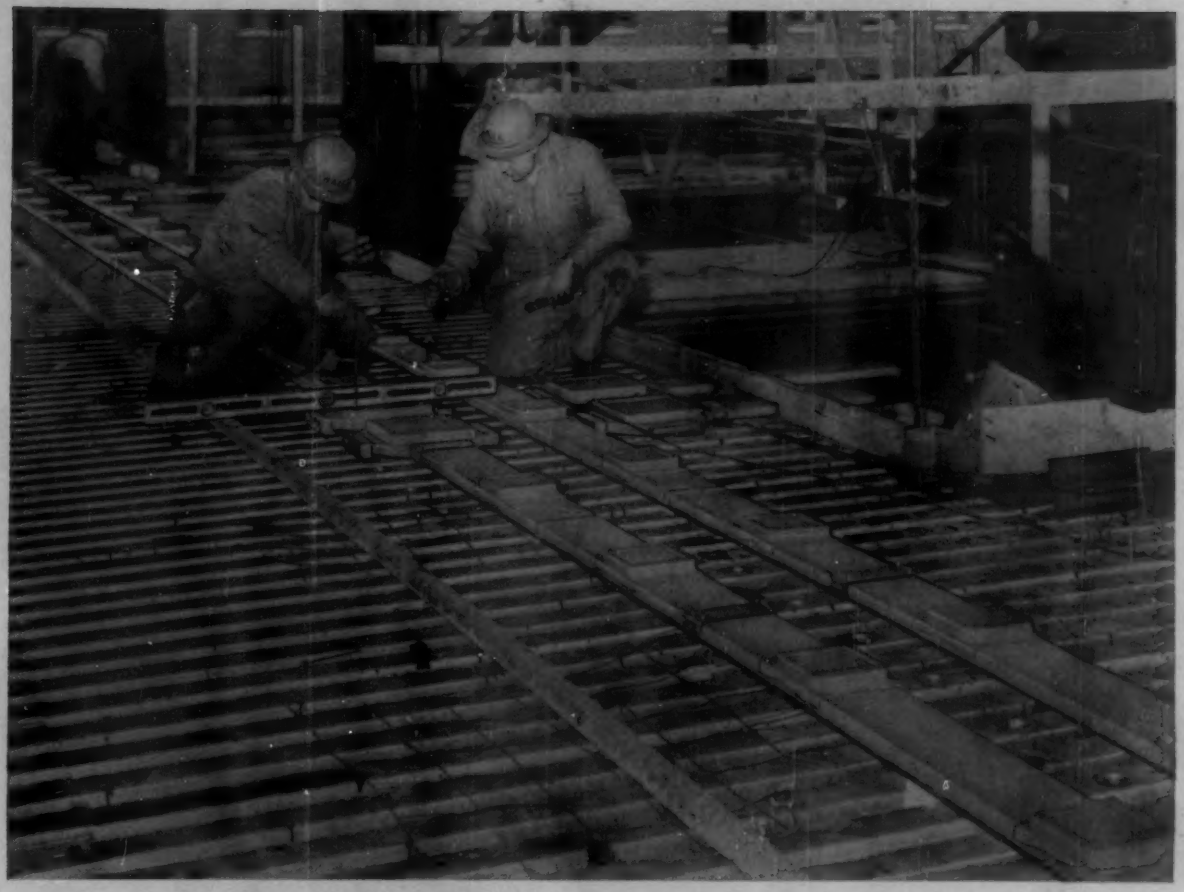

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COLOGNE BUILDS A NEW HOME FOR ITS OPERA TO REPLACE A WARTIME CASUALTY

The *sine qua non* of any self-respecting German city is its opera house. The German opera house was also a frequent casualty in wartime bombings; but the Germans have made the best of a bad thing by taking the opportunity to build a series of modern theaters. One of the latest in this series is the Cologne Opera House opened for rehearsals last spring.

Designed by architect E. H. Wilhelm Riphahn and "stage expert" Unruh, the new theater was planned and built in fits and starts since the end of the war, its course blocked at various times by city planning changes and currency reform.

Shown here is the first phase of the development—a "Large House," seating about 1350 spectators. Still to be built: a "Small House" with an auditorium for 800, to be joined with the main hall by a two-storied glass-covered bridge; and a restaurant and cafe on the square in front of the theater, also to be joined to the main hall by a covered passage.

Facilities in the completed building include, on the ground floor, the main entrance, from the square and entrance lobby, as well as box offices and the central checkroom. On the orchestra floor there is the main lobby (shown at right), with a smoking room at one end and a refreshment room at the other, and entrance into the 899-seat orchestra level. On the second and third floors, staggered stairways give access to the seating; circular lobbies are located on balconies over the main lobby.

Total cost of the building was about $3.75 million.

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Meetings and Miscellany

Drawn for the RECORD by Alan Dunn

"Harvard '32, science major,—M.I.T., graduate research,—Manhattan Project '42—Los Alamos, consultant—Entiwetok—and finally—the Brussels Fair—"

The State of Construction

The total of contracts for future construction reported by F. W. Dodge Corporation for January was over $2 billion, but ten per cent below the total for January 1957. Residential building contracts dropped only five per cent, and heavy engineering seven per cent, from the 1957 month, but nonresidential fell 17 per cent. For details: page 398.

The Political Scene

With ten weeks still to go before preconvention nominations closed, the A.I.A. hustings appeared to have their *personae politicae* for this year's election. The candidates: *for president*—John N. Richards of Toledo and Alexander C. Robinson III of Cleveland; for *first vice president*—Albert S. Golemon of Houston and Philip Will Jr. of Chicago; for *second vice president*—Austin W. Mather of Bridgeport, Conn., Herbert C. Millkey of Atlanta and Henry L. Wright of Los Angeles; for *secretary*—Louie L. Scribner of Charlotteville and Edward L. Wilson of Fort Worth; for *treasurer*—Gerson T. Hirsch of Pleasantville, N. Y., and Raymond S. Kastiendieck of Gary, Ind. Nominations are also in from the regions for the four directors to be elected this year, and these, usually tantamount to election, are as follows: *North Central States*—Harold Spitznagel, Sioux Falls, S. D.; *Western Mountain*—Frederic H. Porter of Cheyenne, Wy.; *New York*—Trevor W. Rogers of Buffalo; *New England*—Alonzo J. Harriman of Auburn, Me. Election will, of course, take place at the A.I.A. annual convention to be held July 7-11 in Cleveland.

Little Resigns as Oregon Dean

Sidney S. Little has resigned as dean of the School of Architecture and Allied Arts of the University of Oregon. Mr. Little, whose resignation is effective July 1, will remain on the architecture faculty at Oregon as a professor of architecture. Mr. Little, dean for the past 12 years, said in announcing his resignation from that post that he had been considering the move for some time, wishing to devote more time to teaching and research.

Edward D. Stone Honored

Architect Edward D. Stone of New York is one of ten leaders of U. S. arts and letters recently elected to life membership in the National Institute of Arts and Letters. The National Institute is the highest ranking honor society of the arts in the U. S., with a membership limited to 250 U. S. citizens "qualified by notable achievements in art, literature or music." Formal induction of new members will take place May 21 at the annual joint ceremonial of the National Institute and the American Academy of Arts and Letters. Mr. Stone, architect of the American Pavilion at the world's fair opening this month in Brussels, has been the recipient of numerous professional honors and awards, among them the Gold Medal of the New York Chapter of the American Institute of Architects and two Gold Medals of the Architectural League of New York.

Contractors Expect Better 1958

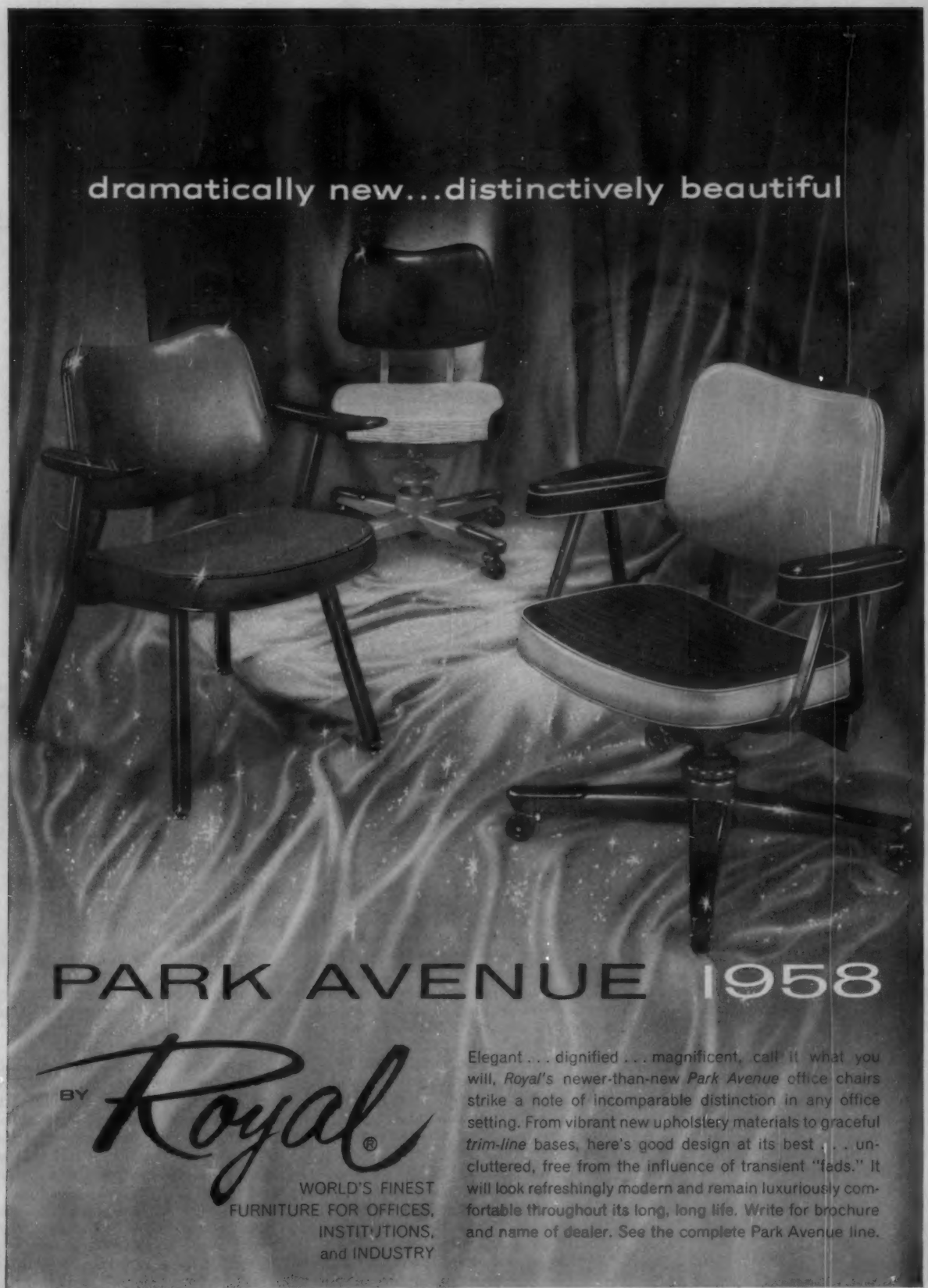
Labor relations held the center of the stage at the February convention of the Associated General Contractors of America, Inc., held in Dallas, Tex. and attended by a record-breaking crowd of more than 2000.

The A.G.C., through its 1957 president, Lester C. Rogers, Bates & Rogers Construction Corp., Chicago, demanded that the building trades give employers a fair day's work for a fair day's pay. Meeting with newsmen on the first day of the 39th convention, Mr. Rogers told of A.G.C.'s attempts at the bargaining table to eliminate "nonproductive wasteful practices and to hold wage increases to reasonable levels."

Make work, featherbedding and other restrictive practices were increasing despite lip service repeatedly given by labor leaders to the idea of a full day's work for a full day's pay, Mr. Rogers asserted.

These were strong words, indeed, for the general contractors who now hope to come nearer their labor goals in bargaining sessions throughout the industry this spring. It remained to be seen just how seriously the demands would be taken at the local level.

There was evidence that the national offices of the Building and Construction Trades Department of the AFL-CIO were firmly back of the A.G.C. proposals, however. On the same day that Rogers made his an-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The new, gleaming glass and stainless steel home of the Inland Steel Company in Chicago contains the largest clear-span floors of any tall building ever constructed. With this design achievement the architects, Skidmore, Owings and Merrill have given Inland Steel the opportunity to attain complete interior flexibility. And, Inland has taken full advantage of this opportunity through the use of movable interior walls.

Because the 177 x 58 foot floor area is uninterrupted by supporting columns, the entire ceiling was hung and the carpeting laid floor-by-floor instead of room-by-room. While these operations were underway, the movable interior walls designed by S-O-M were prefabricated by The E. F. Hauserman Company. Engineers at Hauserman worked closely with S-O-M to bring their wall design to an economical and practical production stage.

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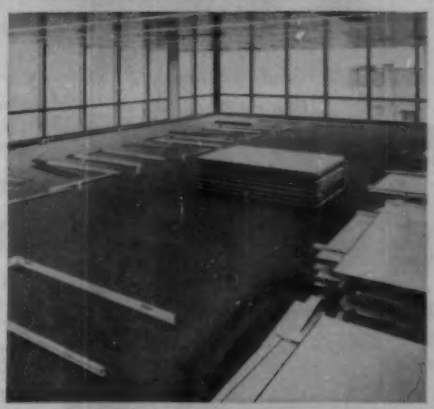
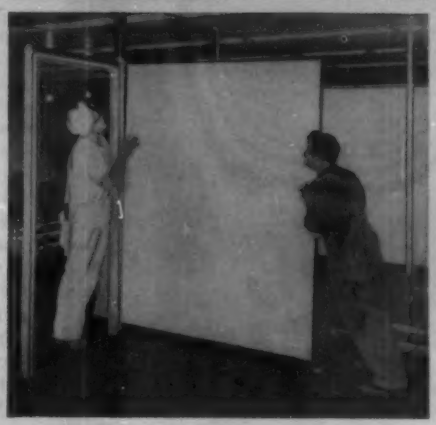




nouncement, in fact, but a few hours later, Richard J. Gray, president of the AFL-CIO department, in speaking to the general convention session pledged his backing of the A.G.C. demands. This came in the form of a 10-point policy statement adopted earlier by the Building and Construction Trades Department as its own policy. This seemed to satisfy the general contractors that the national office, at least, was behind their own views and that the burden would fall in the contact negotiation meetings.

Point 8 of Mr. Gray's statement read: "Slowdowns, forcing of overtime, spread work tactics, standby crews and featherbedding practices have been and are condemned." This was the nub of the contractors' complaints.

One of the nearly 30 resolutions passed at the Dallas meeting called for establishment of a Federal coordinator of public works on a permanent basis. Association officials pointed out that the present coordinator (Maj. Gen. John J. Bragdon) is a coordinator of planning only, and is an assistant to the President. They would like to see the function more permanently endowed by legislation and broadened to encompass an assurance that any anti-recession public work will be performed on a contract construction rather than a day-labor basis.

In one sense, the function sought by the A.G.C. would strengthen the present office of the Coordinator of Public Works Planning by placing it on a permanent, continuing basis with greater responsibilities than are now present. There is no suggestion that any of the supervision of public works construction be taken away from the executive contracting agencies now handling it.

The general contractors were optimistic about construction prospects for 1958. A.G.C.'s Executive Director, James D. Marshall, told the convention that contractors face an expanded market during this year while there are other declines in many sectors of the economy. He estimated a construction market potential of $68 billion this year, some $3 billion above last year's total. Materials were said to be in encouraging supply, the basis of steel and cement having shown a strong position for several months.

The delegates installed Fred W. Heldenfels, Jr., Heldenfels Brothers, Corpus Christi, Texas, as the new president for 1958. James W. Cawdrey, Cawdrey and Vemo, Seattle, Wash., took the office of vice president vacated by Mr. Heldenfels.

Six charter members of the A.G.C. attended the convention and were honored in a "roll call of A.G.C. founders" as a part of the program. They were James L. Allhands, Dallas, Texas; William H. Comete, Toledo, Ohio; W. F. Creighton, Nashville, Tennessee; C. M. Davis, Fort Worth, Texas; Henry J. Fauber, Ashland, Ohio, and E. R. Shenk, Erie, Pennsylvania. A seventh living founder, not at the Dallas convention, is John A. Dahlman, Milwaukee, Wisconsin.—*Ernest Mickel*

Banquet speaker William Caudill at the Wisconsin Chapter A.I.A. annual meeting, with new chapter president Joseph H. Flad at left and Theodore Eschweiler at right

Wisconsin Chapter officers: Arthur O. Reddemann, retiring president; Robert P. Potter, reelected secretary-treasurer; new president Flad; and John Brust, the incoming vice president

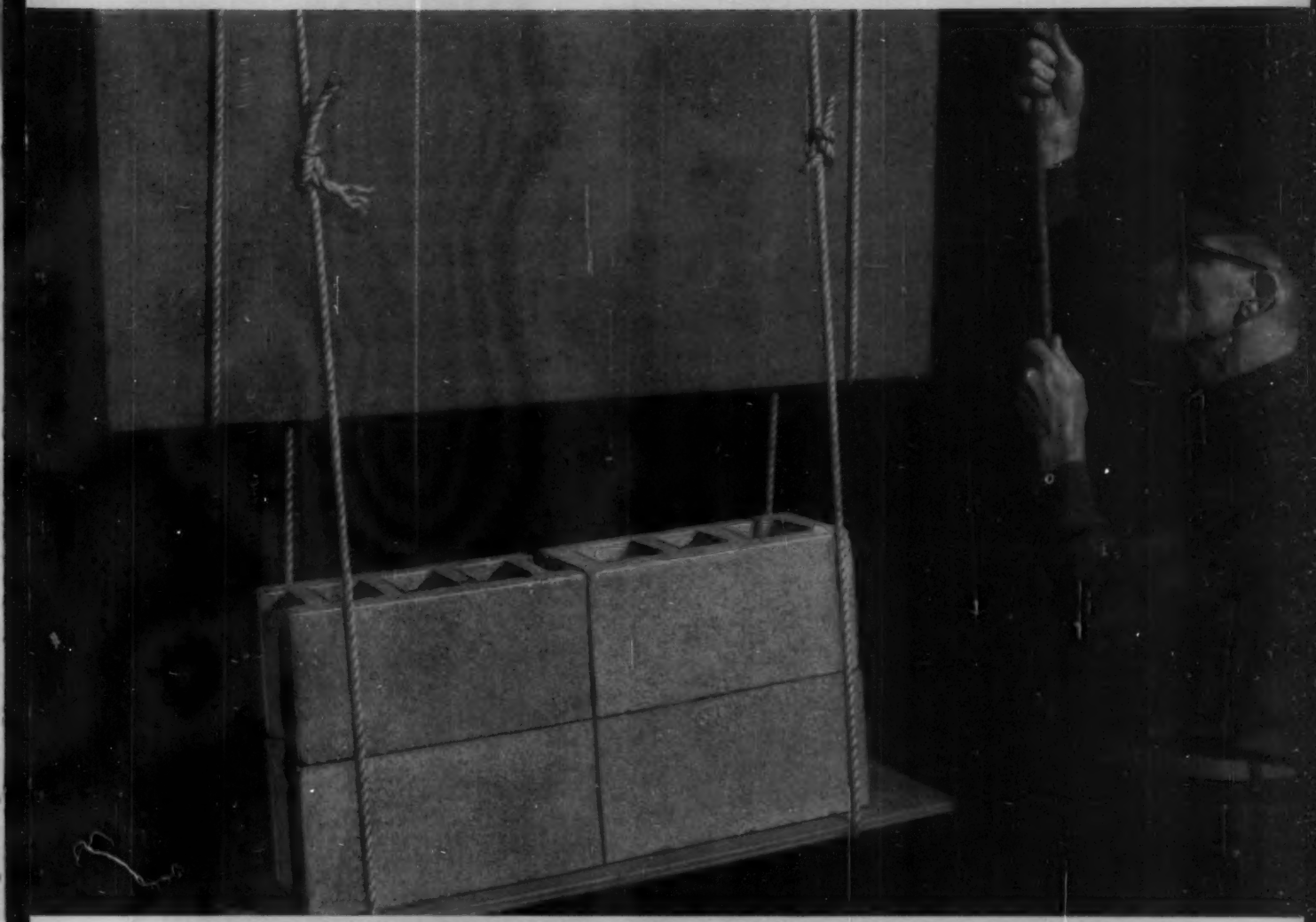
"New" New School for Wisconsin?

"Seven Lamps of Architecture" was the theme of the recent annual convention at Madison of the Wisconsin Chapter of the American Institute of Architects. William W. Caudill of Caudill, Rowlett, Scott and Associates, principal speaker, declared educational change is needed and urged that the current thinking about a new school of architecture for Wisconsin contemplate "a new kind of school as well as a new school. . . . I hope," Mr. Caudill said, "that the program of this new school will recognize that learning to analyze is sometimes as important as learning to do, that finding out what the problem is must precede its solution. I hope that the curriculum will give considerable stress to architectural analysis, that there might even be a major that leads to a degree which would qualify certain students with analytical minds to practice as architectural analysts." Prizes in the chapter's competition for draftsmen were awarded to Douglas MacNamee ($100), Onen Wakefield ($75), Raimond Juerisson ($50) and Ronald Novotny ($25).

Honored by fellow faculty members and alumni for "faithful service to Yale" and holding sterling silver sculptures each designed to reflect "the personality and interests of the recipient": Henry A. Pfisterer, professor of architectural engineering and former acting chairman, department of architecture; Boyd M. Smith, professor-emeritus of drama, who retired January 1 as dean of the School of Architecture and Design and Jose Albers, who will retire as chairman of the Department of Design June 1. The sculptures, executed by Robert Engman, instructor in design, were made from identical five-in.-sq pieces of silver about one eighth in. thick

Winner of Rubber Floor Design Awards Competition, Leonard Payne, designer for Harold Spitznagel & Associates, Sioux Falls, S.D., receives his $1500 prize and plaque from Ross R. Ormsby, president of the Rubber Manufacturers Association, whose Rubber Flooring Division was the sponsor

Harry A. Anthony (left above), city planner and assistant professor of planning and housing at Columbia University, has been awarded the 1958 Arnold W. Brunner Scholarship of the New York Chapter A.I.A. Mr. Anthony, shown with chapter president Robert S. Cutler, plans to use the $2400 award to complete a book on principles and practice of urban planning



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Hoist test proves rough handling won't damage Armstrong Temlok Roof Insulation

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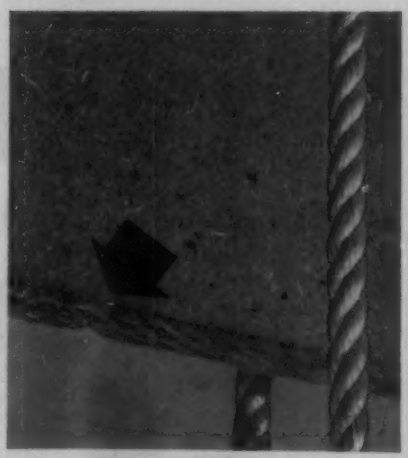

Arrow in photograph shows a typical point where the rope slings supported the weighted piece of Temlok Roof Insulation. Notice how the rope did not pull through the material. There was no serious damage to the edges that would prevent a tight fit.

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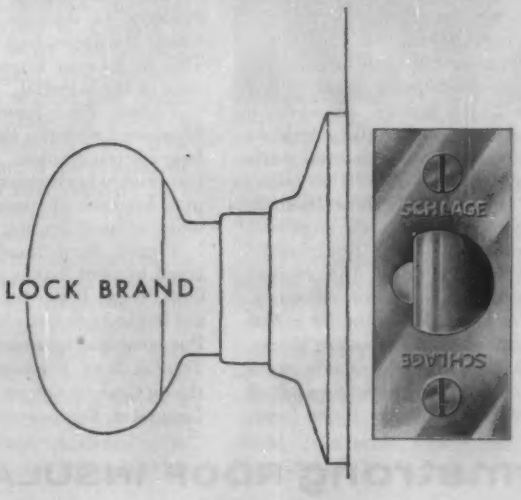

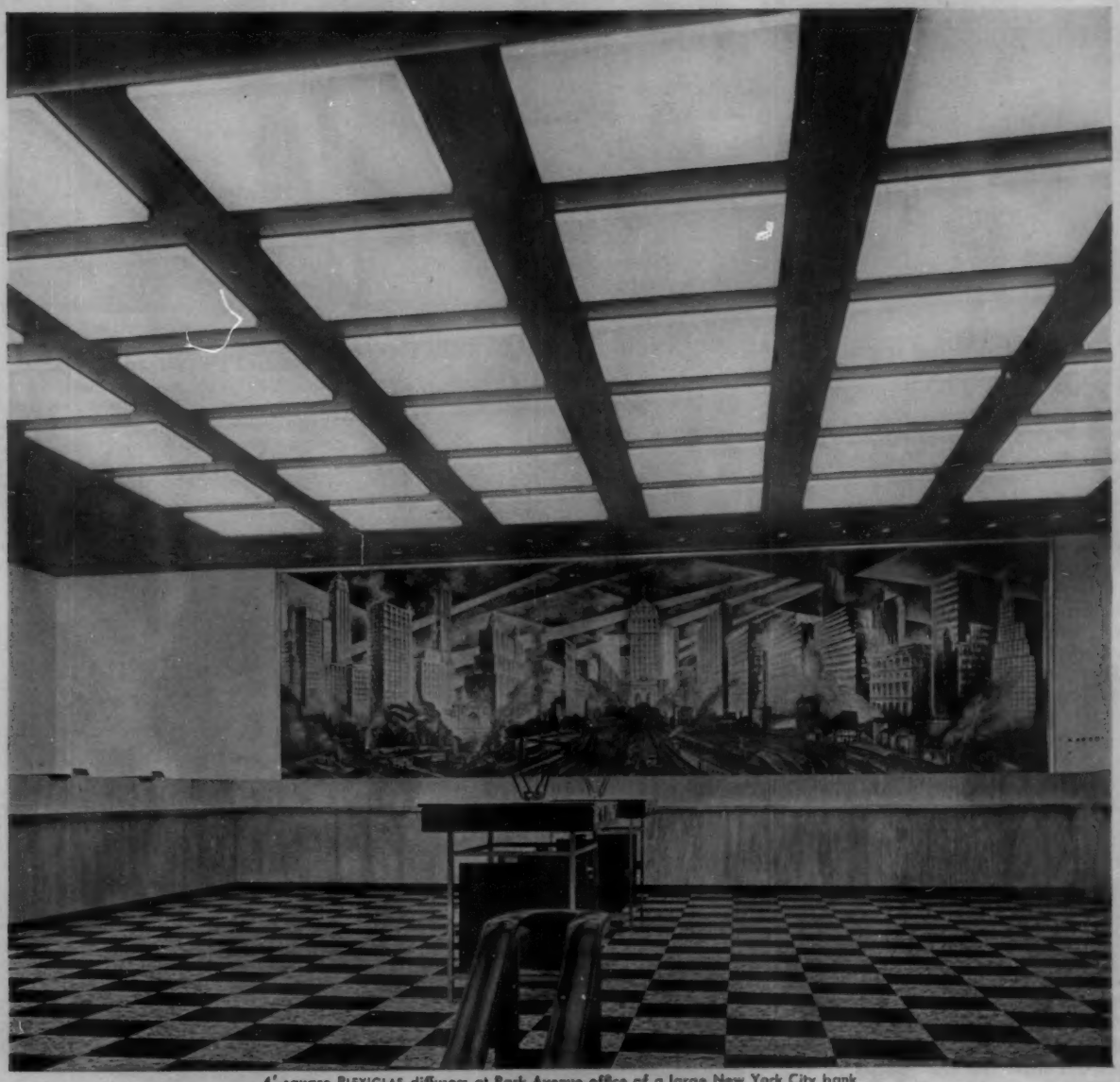

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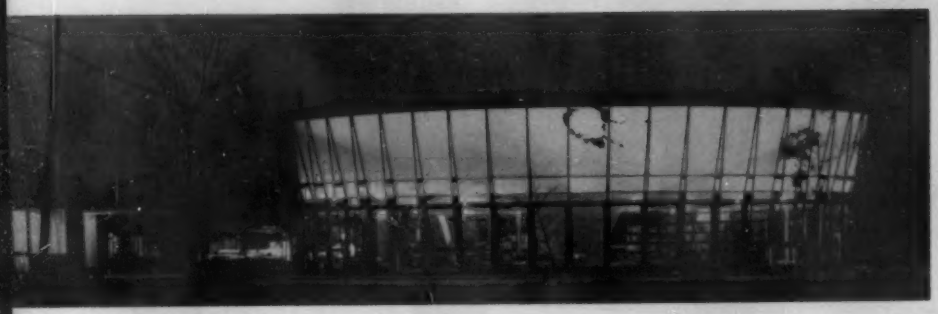

Above: Kenzo Tange—in Hawaii, clearly!—and (left above) his citation-winning building—Children's Library, Peace Park, Hiroshima. Left: with Tange, winners of Hawaii A.I.A. chapter's annual awards—Alfred Preis, Richard N. Dennis, Howard Wallace (Wood, Weed and Kubala Ltd.), Donald Chapman. Below: top honor awards. 1. Union Hall addition, I.L.W.U. building; Alfred Preis, architect. 2. Alice C. Guthrie residence; Richard N. Dennis, Architect. 3. Tract house, Orchard Hills subdivision, Aiea Heights; Wood, Weed and Kubala Ltd., Architects

HAWAII AWARDS FIRST PAN-PACIFIC ARCHITECTURAL CITATION

A unique architectural award has been established by the Hawaii Chapter of the American Institute of Architects—the Pan-Pacific Architectural Citation, to be given annually for outstanding architectural accomplishment in a country bordering on the Pacific Ocean. There will be no monetary stipend, the value to the recipient resting wholly in the professional recognition involved.

The first award was made in January to Kenzo Tange of Japan for the design of the Children's Library at Hiroshima. The Citation, presented to Mr. Tange as a certificate of award, read as follows: "The Hawaii Chapter of the American Institute of Architects, having established the Pan-Pacific Architectural Citation to encourage architecture of the highest order, and to honor the architects responsible therefor, seeks to recognize works of exceptional architectural merit in the Pacific area, Whereas, among the many meritorious projects evaluated, it is agreed that the hereinafter designated work is of singular worth, the Hawaii Chapter of the American Institute of Architects does award this citation to Kenzo Tange for the design of the Children's Library at Hiroshima, Japan."

Mr. Tange flew to Honolulu to receive the award, which was presented at the Chapter's annual dinner by Harry W. Seckel, chairman of the Association of Past Presidents of the chapter and also chairman of the Pan-Pacific committee. "The purpose of the award," Mr. Seckel said, "is to honor outstanding architectural achievement and to make architects in the Pacific area more cognizant of the best efforts of their foreign colleagues. In so doing, we are accepting a responsibility suggested by our unique geographic location."

Also at the annual dinner, chapter honor awards (and three honorable mentions, not shown) were presented; and Howard L. Cook was installed as chapter president, succeeding Richard N. Dennis.

1

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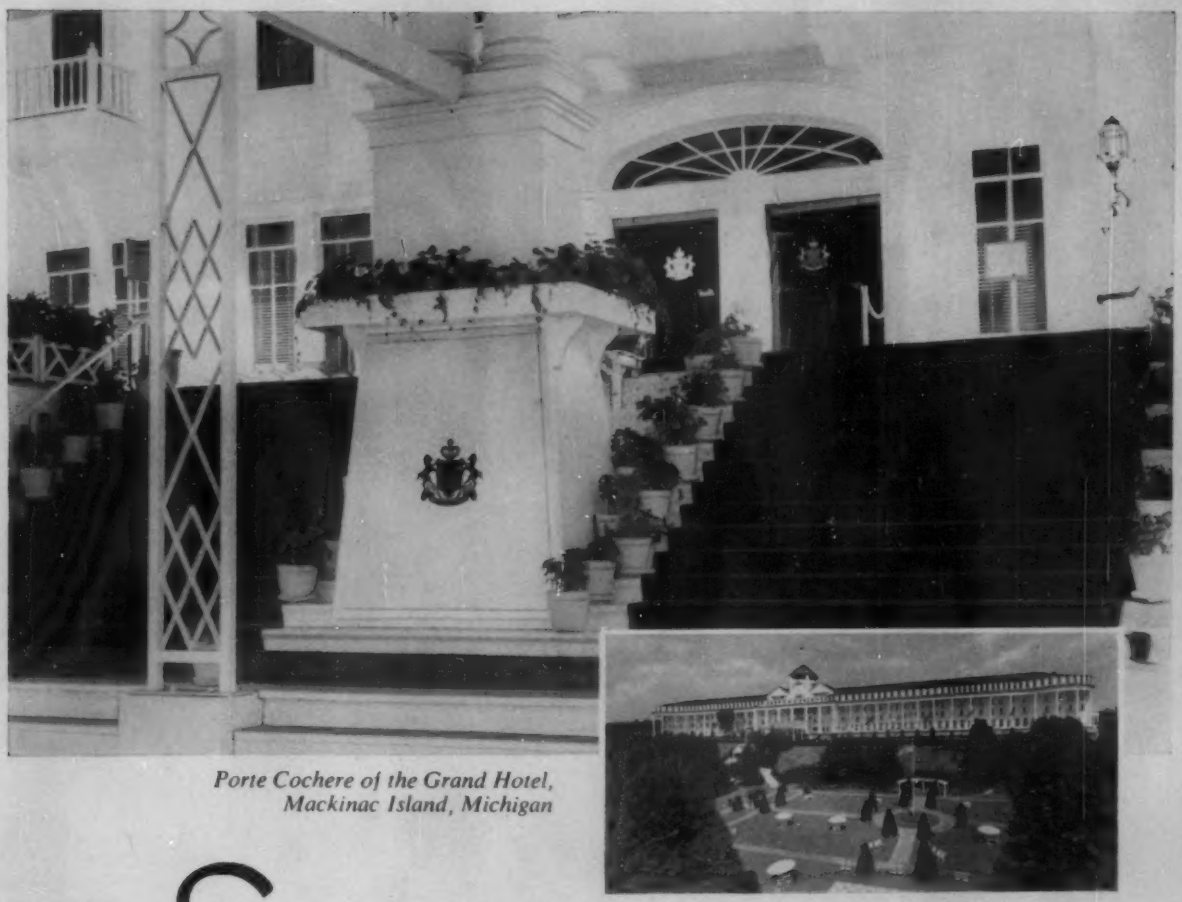

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A Washington Report by Ernest Mickel

HOW MUCH WILL U.S. USE PUBLIC WORKS CONSTRUCTION AS ANTI-RECESSION TOOL?

The flow of Federal funds into public works was being stepped up rapidly as the first quarter ended. Here are some of the major moves taken by the Administration and Congress—

A $2 billion post office renovation and new construction plan was proposed by the President in February.

The Bureau of the Budget was releasing construction funds in an ever-increasing flow—funds appropriated for this fiscal year but held back under a policy of freezing reserves following quarterly allotments. These represented hundreds of millions of dollars, most of which would be spent before June 30.

The Defense Department said it was increasing its construction spending rate (annual) to more than $2 billion during the final five months of the current fiscal year. This was much above earlier plans. It would increase spending about five-fold in the latter months of the year, up to July 1. Of this, $450 million was earmarked for use in distress areas where unemployment is high.

The President asked Congress to increase his 1959 budget estimates by $85.6 million for reclamation, watershed, and flood protection. About $70.8 million would be used by Bureau of Reclamation, $25 million for the start of new projects, the balance by the Agriculture Department for starting 40 new watershed projects and stepping up work on 60 others.

The President submitted additional budget requests for 1959 covering a request for $171,450,000: $125.25 million for civil works of the Army Corps of Engineers and $46.2 million for speeding up Hill-Burton hospital construction.

The Postmaster General announced bids would be opened early in the spring on 13 authorized new lease-purchase structures. Total estimated cost of these post offices is $9.1 million.

In Congress two resolutions—one pertaining to civilian work, the other to military—were rushed through in an effort to spur the White House to still greater speed in releasing funds for construction.

Sen. Dennis Chavez (D-N. Mex.), chairman of the Senate Public Works Committee, introduced a five-year $14 billion public works program aimed at speeding up work in all categories. $2788 million of the authorizations would be spent in the fiscal year beginning July 1.

The Senate passed unanimously a $1850 million anti-recession housing bill—the Sparkman measure. The House gave it quick approval and sent it to the President.

The President released an additional $200 million to the special assistance fund of the Federal National Mortgage Association to step up its secondary market operations.

What Else?

But one of the questions most often asked in Washington last month—and certainly not absent from the minds of architects—was this: When will the Federal government launch a major program of public works construction if, indeed, it decides to do so as an anti-recession move?

Indicative answers were hard to come by in high places although speculation was rife at lower levels both in and out of government.

One thing was certain; the few top officials given the responsibility of advising President Eisenhower on this and closely related economic matters were watching the winds closely, hopeful, of course, that a turnaround in the trend would preclude any necessity for all-out expenditures to make work for unemployed in the public category.

The President himself said he thought those projects already approved should be accelerated and his executive agencies had been moving in that direction for weeks. Federal and state governments should encourage more homebuilding, the President said.

"Coordination" Speeded

Newsmen digging deeper than these top policy statements found a flurry of activity that can be considered groundwork for a greatly enlarged public works spending program if it should come to be ordered. In the office of Maj. Gen. John S. Bragdon, the President's special assistant for the coordination of public works planning, the work pace was faster as his limited staff dusted off details on the public works planning.

General Bragdon informed his interviewers that he would give out no figures at this time, that his office made no policy decisions in the matter, but would respond when the word came from the President's office. As he has done so frequently in the four years since his appointment, the public works planning coordinator stressed the staggering need for all manner of construction throughout the country—a requirement he feels is only partially represented in the $204 billion figure which the Department of Commerce has estimated as being the construction cost of essential public facilities during the decade 1955-1965.

The local and state shortages resulting from a major depression, two wars and obsolescence plus a too conservative allowance for growth challenge the imagination, he insists, while these governments are lagging farther and farther behind in satisfying the demands. State and local expenditures on public works (including Federal-aid projects) averaged $10.2 billion annually for the three years, 1955, 1956 and 1957, reaching $10.9 billion in 1957. But at this slightly accelerated rate, those bodies cannot hope to overcome the deficiencies during the years immediately ahead.

Need Called "Gigantic"

The need for public works is gigantic and is not being taken care of, General Bragdon reiterates.

While not underestimating the value of Federal government programs, he noted that the heaviest expenditures by far were by the states and local communities. The Federal outlay in fiscal 1957 was $2.9 billion as against the states' program of nearly four times as much public works construction.

General Bragdon's status-of-planning inventory is current for the Federal plans but necessarily lags on a state and local basis. The last state and local findings in this regard were published midway in the year 1955. Federal funds have been sought, and still are being asked, to modernize this accounting of state and local intentions and their reserve of planned projects.

While the pressures rolled off Capitol Hill for the Administration to act in the public works field, the executive agencies were compiling their own lists of projects which could be hastened through faster planning procedures. A new sense of urgency pervaded this work as authorities thought in terms of where the construction would be most helpful in providing jobs.

These lists, funneled through the coordinator's office, were being studied for those jobs that could be advertised at once, and those which could be brought to the bidding stage quickly.

This included the reclamation work of the Interior Department, the civil works of the Army Corps of Engineers, the highway program for which the Department of Commerce is responsible through its Bureau

continued on page 366

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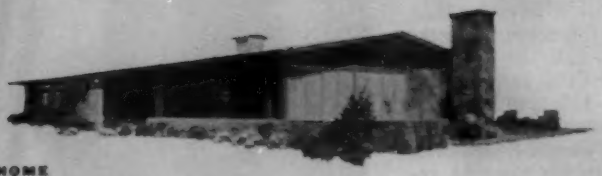

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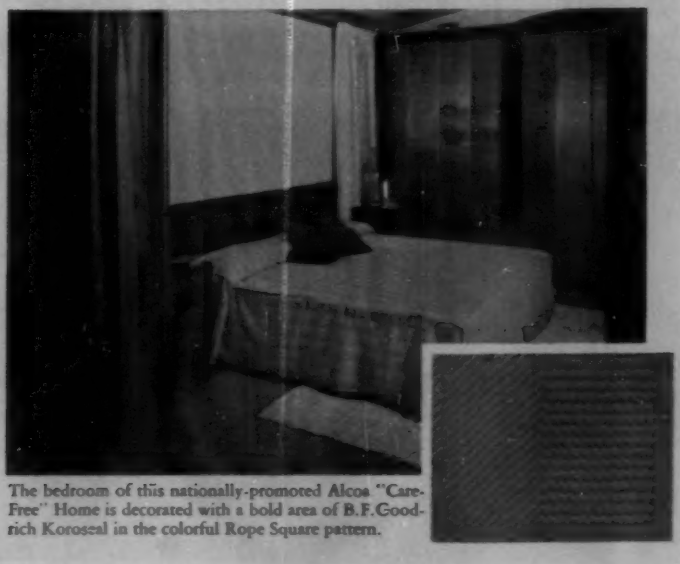

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News from Canada by John Caulfield Smith

QUEBEC AND ALBERTA ARCHITECTS HOLD ANNUAL MEETINGS

One of the liveliest and most enjoyable of its assemblies to date was held by the Province of Quebec Association of Architects at the Chateau Frontenac, Quebec City, January 30-February 1. Over 125 members and about 50 ladies attended.

As H. A. I. Valentine, retiring president, stated in his opening remarks, "All those interested in architecture and the applied arts never tire of revisiting this jewel of old France, set so dramatically on the rugged bluffs overlooking the broad St. Lawrence as it sweeps ever onward to the sea."

Business sessions ranged over a wide agenda. Proposals made and dealt with concerned creation of a provincial community planning department, encouragement of improvement in the standards of architecture, revision of the code governing professional competitions, revisions to the fee structure, establishment of individual chapters of the P.Q.A.A., and securing title to the building purchased as association headquarters.

In addition to many social functions, delegates enjoyed a visit to the new Medical School at Laval University. The architect, Lucien Mainguy of Quebec City, acted as guide.

Signally honored were Edward J. Turcotte of Montreal, a past president of the P.Q.A.A., and Dr. A. J. Hazelgrove of Ottawa, a past president of both the Ontario Association of Architects and the R.A.I.C. Each received the Medal of Merit for outstanding service to the profession.

Also, for contributing to the advancement of architecture, a token of appreciation was presented to Henri Mercier, C. Davis Goodman and Paul

Quebec City rink made clean sweep of its Montreal competition in P.Q.A.A.'s annual match for Meadowcroft Trophy. Losers (standing) are Robert A. Johansen, Frank J. Nobbs, Paul Brassard and George Walker. Winners (kneeling) are Gerard Venne, Lucien Mainguy, Fred A. Walker and Gaston Amyot. At opening of annual assembly, (top right) group of P.Q.A.A. notables: President Hugh A. I. Valentine, Georges deVarennes, honorary treasurer, and Randolph C. Betts, second vice president, all of Montreal; Gerard Venne, first vice president and incoming president, and Edouard Fiset, organization committee chairman, both of Quebec City. Above right: P.Q.A.A. visitor Douglas E. Kertland (second from right), R.A.I.C. president; and (left to right) Randolph C. Betts of Montreal, Mr. Valentine and Mr. Venne

1958 Executive of the Alberta Association of Architects sits for a portrait: (front row) D. Gordon Forbes, Edmonton, treasurer; T. A. Groves, Edmonton, honorary secretary; J. B. Bell, Edmonton president; John Stevenson, Calgary, first vice president. (Back row) Howard L. Bouey, immediate past president and member at large; Bernard Wood, Hugh Dunn, R. F. Bouey, members at large; Hugh Seton, second vice president—all of Edmonton. Member at Large K. L. Bond, Calgary, was not present for photograph. Right: at opening party of Alberta meeting, Howard Bouey snapped with guest speaker Prof. Ralph Rapson, University of Minnesota School of Architecture head, and J. B. Bell

Canada Abroad—(left) Hotel and cooperative apartment homes project to cost $5 million, designed by Architects Wilson and Newton of Toronto for 17½-acre site in Jamaica, will be completed this year; (right) nearly-completed Canadian Pavilion for Brussels Fair, scheduled to open this month; architect, Charles Greenberg

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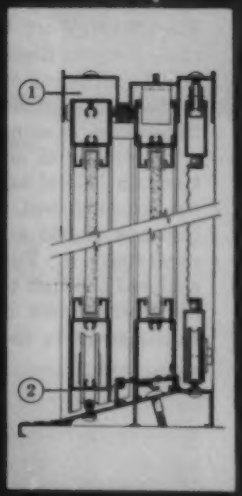

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Simplicity of line and imaginative blending of textures and color keynote the warm, friendly interior of the new First Methodist Church in Hopkins, Minnesota. To help achieve this dignified, yet colorful effect, the architects chose Romany•Spartan small unit tile in subdued colors—plain for chancel floor and random pattern for sanctuary.

No matter what your problem, indoors or out, there's a Romany•Spartan tile to create exactly the right mood or effect. Be sure you're familiar with the complete line. If you'd like design help or more information, contact your nearby Romany•Spartan representative or write United States Ceramic Tile Company, Department **R-17,** Canton 2, Ohio.

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Brassard, all of Montreal.

Paul Gouin, Q.C., chairman of the Quebec Government's Historic Sites and Monuments Commission, was the principal speaker at the P.Q.A.A.'s closing luncheon.

Urging his hearers to help the province in its efforts to preserve and protect examples of ancient architecture, Mr. Gouin spoke of the fight waged for the past 25 years to save old buildings for posterity. He suggested that a commission be formed, composed of architects, town planners, and other experts in the arts, to encourage a contemporary architecture which would do justice to Quebec's traditions.

In charge of P.Q.A.A. destinies in 1958 will be the new president, Gerard Venne of Quebec City. In taking office, Mr. Venne pledged himself, with the assistance of other members of the association's council, to carry on tasks already begun. He urged the promotion of good public relations to create more demand for the profession's services and greater recognition of architecture, the fostering of good relations with other branches of the construction family, and constant recollection of the motto, "The best of ourselves, for the best of our profession."

Other officers elected in addition to Mr. Venne are Randolph C. Betts, Montreal, first vice president; Georges E. deVarennes, Montreal, second vice president; Richard E. Bolton, Montreal, honorary treasurer; and Edouard Fiset, Quebec City, honorary secretary. Jacques Tisseur of Montreal remains executive secretary.

Alberta Architects Protest Government Competition

Constant expansion of the provincial architectural department was scored by Howard L. Bouey, retiring president of the Alberta Association of Architects, at the organization's 47th annual meeting, held at the Macdonald Hotel, Edmonton, January 31-February 1.

"The present situation," he declared, "is in direct contradiction to our whole concept of government and society." It constituted in his opinion a breach of faith with the principles laid down by the Social Credit party before the 1957 Federal election.

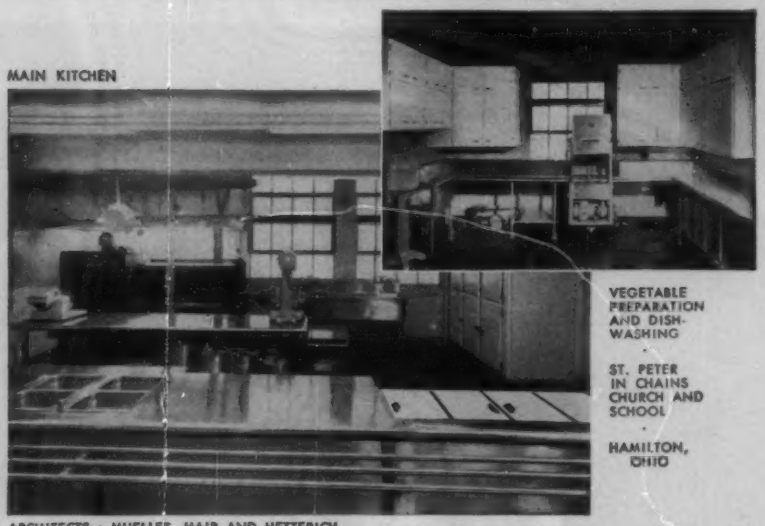
Attempts to supplant architects in private practice were, Mr. Bouey said, particularly evident in hospital work.

He recommended that the association submit a written protest to the government "without rancor or emotion or without involving personalities, based primarily on the rights of individuals against the power of bureaucracy."

Prof. Ralph Rapson, head of the School of Architecture, University of Minnesota, addressed the Alberta architects at the banquet concluding their annual meeting.

It was time, he stated, for members of the architectural profession to expand their thinking beyond con-

At the opening dinner of the Canadian Construction Association's 40th annual meeting—E. V. Gage, Montreal; President Tullis N. Carter, Toronto; Hon. Howard Green, Ottawa, Minister of Public Works and speaker of the evening; and the C.C.A.'s incoming president, H. J. Ball, Kitchener, Ont.



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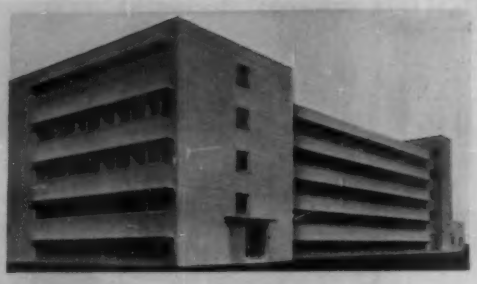
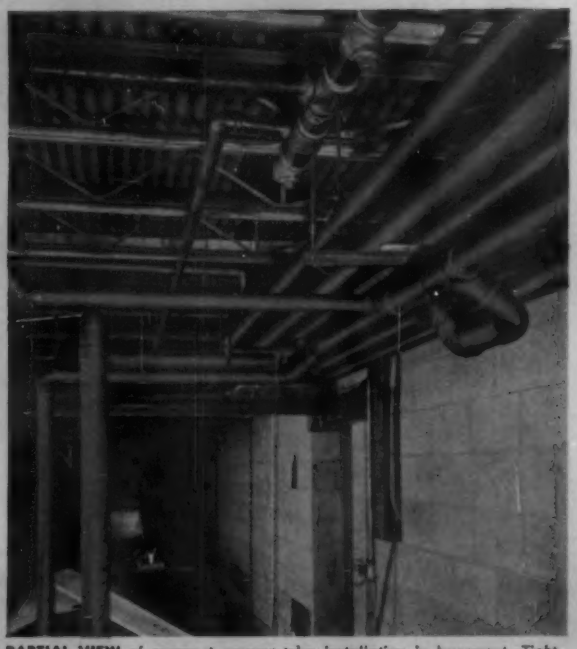


simplifies plumbing in new South Bend hospital

WATER PIPING and sanitary drainage lines of copper tube between floor and ceiling. The light weight of copper tube makes overhead work like this easier and faster. Copper tube with cast-brass solder-joint fittings was used throughout the 5-story building for the sanitary drainage system.



PARTIAL VIEW of compact copper tube installation in basement. Tight working space presents no problem with copper tube and solder-joint fittings. *Architect: John N. Marx, Chicago. General Contractor: Cornelius Pitt and Company, Chicago and South Bend. Mechanical Contractor: Allied Plumbing & Heating Co., South Bend.*

A TOTAL of 7000 feet of Anaconda Copper Drainage Tube, Type DWV, in sizes from 1¼" to 6", was used in the sanitary drainage system of the new South Bend, Indiana, Osteopathic Hospital. In addition, 25,000 feet of Anaconda Type L copper tube, in sizes from ½" to 4", was used for the hot and cold water supply lines.

In commenting on the use of copper tube for the sanitary drainage system, Mr. Cornelius Pitt, President of Cornelius Pitt and Company, general contractor, said, "It just doesn't make sense to use copper plumbing for the water supply lines and another material for the piping of the drainage system.

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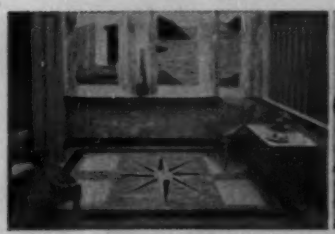

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cern for individual buildings. The architect, he continued, must accept the broader challenge of design—must activate the entire scale of values—if he hoped to create a finer world. Professor Rapson defined architecture as "not only an art but a highly precise social and physical science—the process of organizing and ordering space and relating it to man for his use, comfort and pleasure." He termed architecture a basic need: "It is part and parcel with life and cannot be considered apart. It must acknowledge the past, answer the present and expect the future."

At present, Prof. Rapson charged, "we live in a cultural vacuum. We have technical knowledge and yet we seem not to care for beauty." While there are examples of topflight excellence in architecture, "for every bit of excellence there are countless examples of ugliness."

He said this environment is the "product of our own doing. It is for us to build for pleasure and a full life rather than . . . slow death."

Graham Bell Ltd. prizewinners in recent nationwide competition for design of Canadian community art gallery—(above) top winners Barry V. Downs and J. Blair Macdonald, both of West Vancouver, B. C.; (below) second prize winners Geoffrey Massey, R. B. Archambault, C. D. Rowett and E. J. Watkins, all of Vancouver

Construction Association Bullish on Outlook

Little recession talk was heard at the Chateau Frontenac Hotel, Quebec City, when the Canadian Construction Association held its 40th annual meeting there, January 26-29.

Consensus of opinion was that 1958 would be every bit as good a year as 1957, if not slightly better. Target is in the neighborhood of $7,000,000,000. Of this, defense construction is expected to account for about $100,000,000 compared with $58,000,000 for last year.

Some highlights that emerged from the speeches:

"Easing in the tightness of money gives promise of larger municipal and housing programs"—Tullis N. Carter of Toronto, retiring president.

"We are increasing the public works program in the coming fiscal year"— Hon. Howard Green of Ottawa, Federal Minister of Public Works.

"Basic strengths are present and effective in our economy, and in these lie the best indication (for our resumed growth and development)" —Ralph C. Pybus of Vancouver, president, Canadian Chamber of Commerce.

Nearly 1000 delegates at the C.C.A. get-together agreed to promote more wintertime construction, get behind the home improvement plan, encourage apprenticeship training, seek broader government support for housing and immigration, as well as expansion of the bid depository method of tendering.

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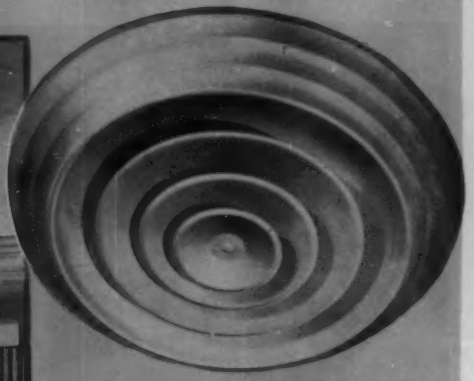

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See Sweet's Arch. File 30h/No, American Sch. and Univ. Annual C-1/No

News from Canada

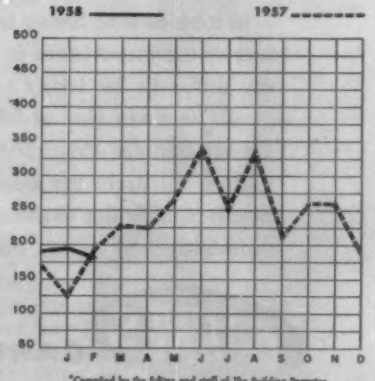
In the election of officers, H. J. Ball of Kitchener, Ont. succeeded Tullis N. Carter of Toronto as president.

News Notes

Wallace Kyro has been elected chairman of the LAKEHEAD CHAPTER, O.A.A. He follows A. R. Haywood. . . . Urban redevelopment will be the theme of the 51st annual assembly of the R.A.I.C., scheduled for the new Queen Elizabeth Hotel, Montreal, June 11-14. . . . Warnett Kennedy of Vancouver is compiling a slide library to assist members of the A.I.B.C. giving public lectures. . . . CENTRAL MORTGAGE AND HOUSING CORPORATION has announced award of $20,400 worth of university fellowships and bursaries for the academic year 1958-59 for studies in community planning and housing. . . . Speaking in Kitchener, Ont., H. J. Ball, newly elected president of the CANADIAN CONSTRUCTION ASSOCIATION, lamented the state of Canada's apprenticeship training program. It should be at least double its present size, he claimed. . . . New president of the ASSOCIATION OF CONSULTING ENGINEERS is J. G. Frost of Montreal, succeeding James F. MacLaren of Toronto. . . . The next exhibition of Massey Medals for Architecture will be held in December at the National Gallery, Ottawa. His Excellency the Governor-General consented to present the awards at the official opening. . . . Of the 730 architectural students at the five Canadian Schools of Architecture, 105 are expected to graduate this spring.

Contracts Awarded: Comparative Figures*

(in $ million)



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Opponents Gain Time in Battle on Capitol East Front Extension

The big argument over extending the central portion of the U. S. Capitol Building eastward 32.6 ft remained unresolved last month and there was little promise that a quick end to the months of feuding over this project was imminent.

Few controversies over Federal building matters had ever involved the architectural profession as had this one. The American Institute of Architects has gone on record repeatedly as being opposed to any major alteration of the East façade, and it made its opinion known again at the mid-February hearing before the Senate Public Buildings and Grounds Subcommittee.

Since that hearing, J. George Stewart, architect of the Capitol, received specific authorization again to proceed with the construction but in view of the surge of protests flowing into Congress, it was doubtful the first work contract would be let immediately as had been planned.

An effort to stop the project failed in the Senate last month when Senator A. Willis Robertson (D-Va.) prepared to introduce legislation as part of an appropriations measure which would prohibit further progress on the extension at least until the end of the current session. Because it was legislation offered as a rider on an appropriations bill, a two-thirds vote was needed to suspend the rules. This failed on the initial test.

Debate on the matter brought out that Senate Minority Leader William F. Knowland (R-Calif.), had "cleared the way" for members of Congress to view the detailed plans in the office of Mr. Stewart. There still was no public showing, the Architect of the Capitol insisting that only the Commission for Extension of the U. S. Capitol could authorize the release of detailed plans and specifications.

In mid-March, future developments seemed to hinge on the fate of the Smith bill—the measure on which the February hearings were held. This legislation, introduced by Senator H. Alexander Smith (R-N. J.), Clifford P. Case (R-N. J.), Joseph S. Clark (D-Pa.) and Hubert H. Humphrey (D-Minn.), would eliminate the requirement that all reconstruction or extension of the Capitol must be in accordance with Scheme B of the architectural plan of March 3, 1905. It was their contention that the wording in the law creating the Commission and calling for the eastward extension unduly restricted the advisory architects.

The February hearing brought out, however, that not all the advisers and associates felt they were handicapped by this wording. Said John F. Harbeson, F.A.I.A., Philadelphia, one of the consultants: "We do not feel we have been hampered by the wording of the act."

And Alfred Easton Poor, F.A.I.A., New York City, one of the associates: "It is our considered opinion that we have not at all been handicapped by the wording of the act under which we are working and have explored extensions to both the east and the west. Had we felt that we were so hampered we would have reported the fact to Mr. Stewart."

The hearings and the Senate floor exchange have served to heighten public interest in the proposed remodeling of the East front. The question of when the Smith bill would come up for debate could only be determined by the Senate leadership, a point noted by Senator Knowland in his statements on the rules suspension.

continued on page 372

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EDITOR: *Elisabeth Kendall Thompson, A.I.A.*
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Toward a *Creative* Architecture For Today

For all the variety in the mainstreams of architecture today, for all the schools of expression that would lead to style, and the millions of words written about "modern" architecture, how much creative architecture do we have, how much is being done, today? It would take a real optimist to say that there was very much of it around us; an honest and just critic would have to say, Not much. Only a few know architecture as a creative process; to the rest it is a fashion bandwagon.

Dispiriting—this viewpoint? Disheartening? No, not for the future of architecture, because even from such a period as this the ideas that make for true progress will survive. But for the future of architects who see architecture as only the superficials of surface or of method—yes: discouraging, dismaying, tragic.

It is to be hoped that some will wonder why this is so, for in their wondering is the germ of what can contribute to a re-emphasis on creative thinking as a precursor of creative design.

We are still in a period of transition, for all that has been accomplished in the last 100 years. However far we have come from the early searchings, we have not yet reached the point of mature expression; nor can we reach it until we understand, deeply as well as broadly, the real mood and temper of our time.

The milestones of architecture have always been those buildings which comprehended and creatively interpreted the spirit of the time. They have comprehended that the spirit of the time is the mind of the times—not the outward trappings of it, not the catch-phrases of the moment, not the pet theories, fads, and fashions. Not empire or democracy, unless to be utterly imperial or utterly democratic was the mind of the time; not mystery or corporality, not gentleness or brutality, not joy or despair, unless these are of the temper of the time. To achieve contemporary comprehension is not easy; it demands objectivity and subjectivity, intuition and logic.

Nevertheless, we must somehow find a degree of this comprehension, for the measure of creativity lies in it. To be novel is not to be creative; what is new is new only because of the particular synthesis which each individual contributes to a group of ideas and conditions. Only what the individual pours into his expression of an idea makes it new; only his view of conditions produces original solutions.

Ideas make us, as much as, or perhaps more than, we make ideas, in architecture as in life itself. Hence—although most of architectural philosophy is, and has to be, *ex post facto*—every creative expression must proceed from ideas. But they cannot be vague ideas; and they cannot be taken over bodily from someone else. Warmed over architectural ideas are no better than warmed over love, because the heart, which was put into the first expression of that idea, is no longer in the second.

One thing we can certainly do is to spark our idea-sources by a new look at some old virtues, forgotten in our excitement over technological developments: balance and line, repose and harmony, light and shadow, rhythm, unity, proportion, scale, character. Some buildings have these; to most these are foreign qualities. Have they become—as Mr. Wright recently said of another, monumentality—"bad words"? Isn't part of knowing the temper of the times knowing why these find so little understanding today?

Yes, there are problems in fostering creativity; yes, there is always the point at which the hand betrays the picture in the mind's eye, when the transformation of idea into architectural terms fails of realization. But when the alternative is the monotony and mediocrity—twin parts of a single problem—that hang over us like Damocles' sword, isn't it worth the try?

E. K. T.

"Redevelopment" and "renewal" are words with a connotation of large-scale operations in finance and in construction. Jackson Square in downtown San Francisco is, however, an example of the revival of a small rundown urban area, completely financed by private funds.

Begun in 1951 by a group of seven decorators who rehabilitated some of the old buildings on Jackson Street between Montgomery and Sansome Streets, Jackson "Square" (it is not really a square) has grown beyond original expectations. It now includes most of the buildings on three blocks and is spreading into the old Barbary Coast section (more recently called International Settlement), with about three quarters of the city's interior furnishings firms, decorators, and designers located there. Several architects also have offices there.

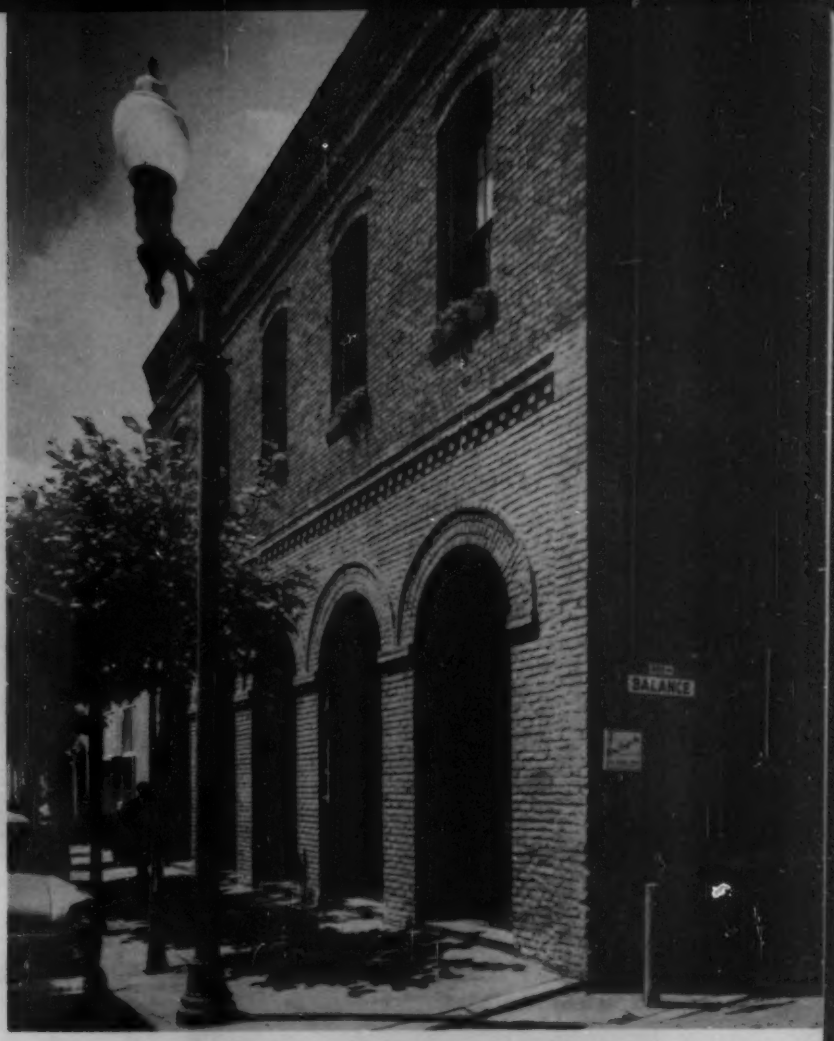
Jackson Square's success as a commercial venture has been phenomenal. But the pleasure it gives San Francisco's design community, not only as a convenient and delightful showcase for all kinds of furnishings, but also as a means of preserving an old part of the city by giving it a vitality of its own, is unbounded.

Renewed Life For An Old Downtown Area

Severely plain exterior of antique dealer's showroom is rehabilitation, not redesign of original building and contrasts with handsome old objects displayed inside

Most of Jackson Square's buildings are two stories high; a few have three floors. Some, like this brick building (right) with its graceful arched openings, date back to the 1870's. Once used by the French consul in the days when the waterfront was only a block away, this building, now owned by Portland designer John Yeon, today houses three decorating firms and Porter/Steinwedell, architects. A tree-planting program begun last summer, will give the street a boulevard atmosphere.

The only contemporary building in Jackson Square, this small two-story structure (left) with a wood-framed glass front was built on a vacant lot. Norman Hubbert was the designer.



George Knight photos

Exterior of Knoll Associates building, left, has been preserved but interior space was completely redesigned as showroom. Detail of building at left is typical of Square

A caution to urban sprawl: Master-planned city-within-city

Wedge-shaped buildings are offices; right, 30-floor tower

Apartment buildings are located away from freeway noise

Haphazard growth and urban sprawl have made Los Angeles an example to the world. Now on one of its few remaining large tracts—the old Twentieth Century lot—a new city is to rise planned to provide open space between buildings, parking where needed and both residential and office quarters.

"Century City" will be located on a 284-acre tract almost in the heart of the Los Angeles Metropolitan area. The $400,000,000 project will provide residential buildings to house 14,900 persons and office buildings for a working population of 16,500. (An additional non-resident 5000 workers will be required for operation of the 1000-room hotel, the 25-acre shopping center, and the film studio, which will remain on the site.) There will be parking on a 1½-to-1 ratio. Grading will begin this summer. Four apartment buildings will be first units to be constructed.

The city, master-planned by Welton Becket & Associates, architects and engineers, will have its focal point in a raised plaza at the north end of the site. From this a Los Angeles version of the Champs Elysées, complete with fountains and landscaping will run the length of the property.

Last year's removal of the height-limit restriction paved the way for the development. One of the office towers will be 30 stories; others will have 20 floors. Apartment buildings are to be of three heights and types: 19 will have 20 floors, 17 will be five stories high, and 21 will be two-story garden apartments. In all, these will provide 3900 units.

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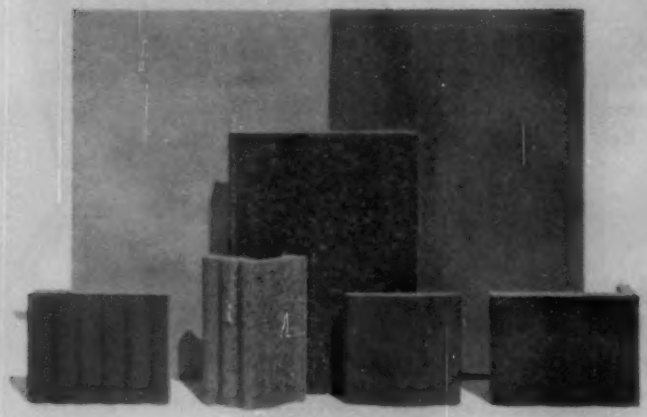

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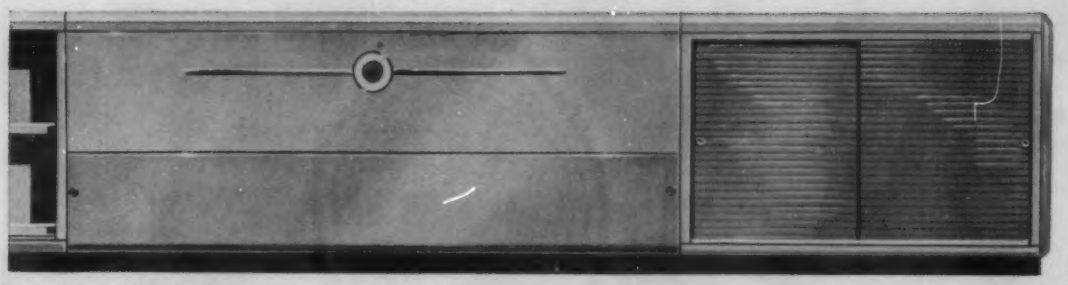

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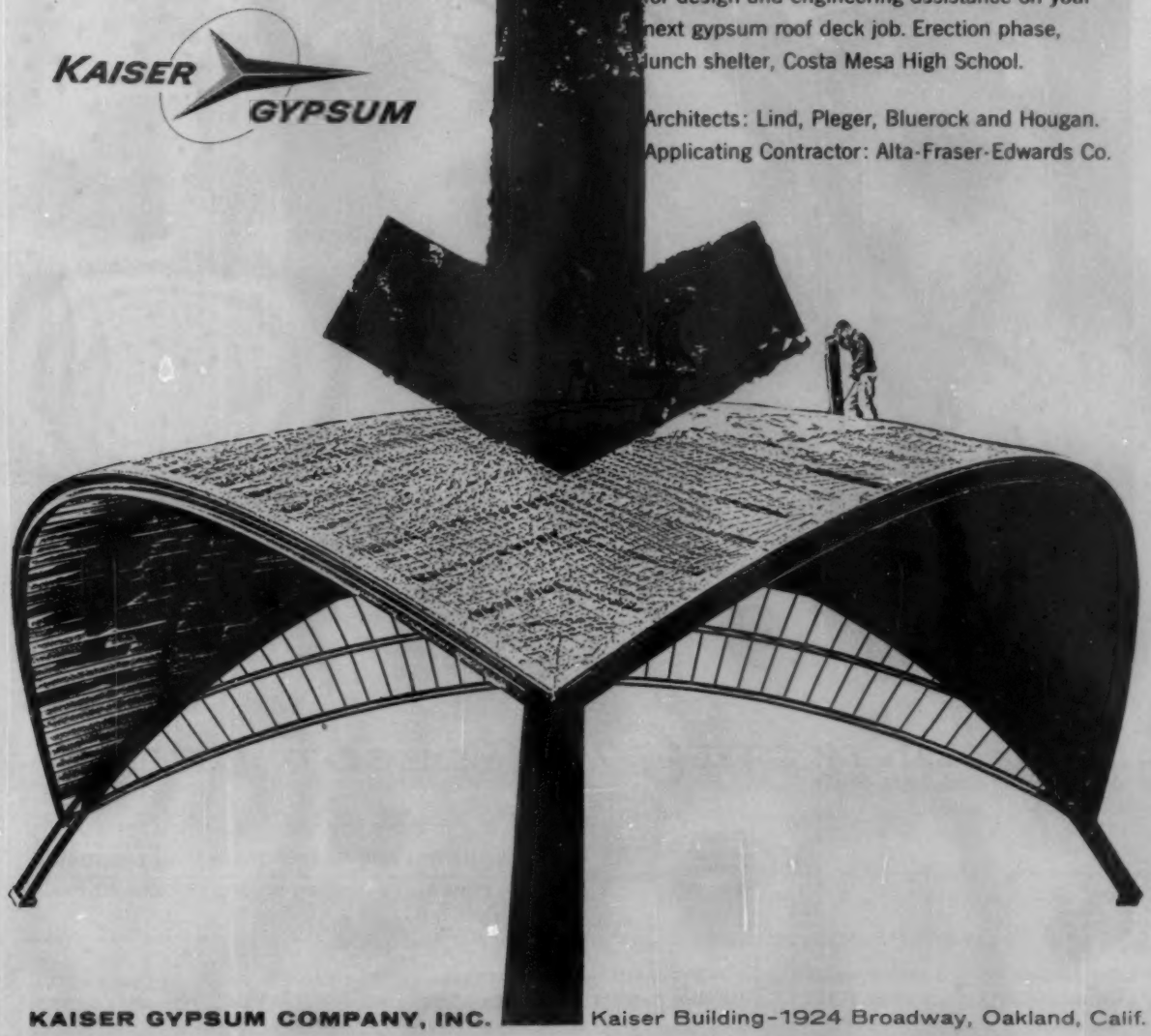

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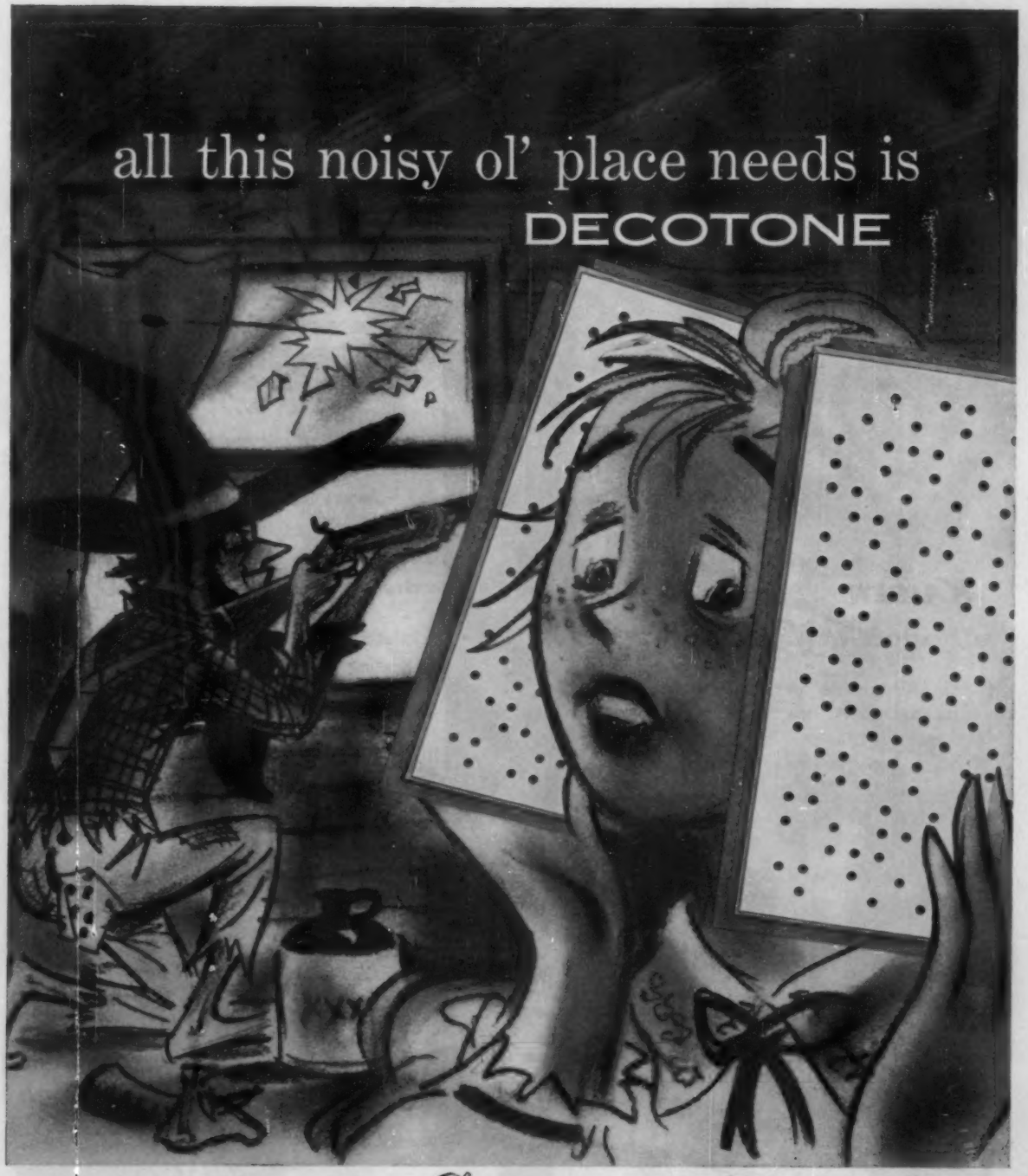

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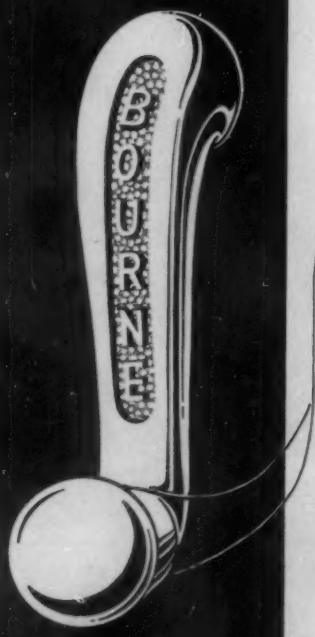

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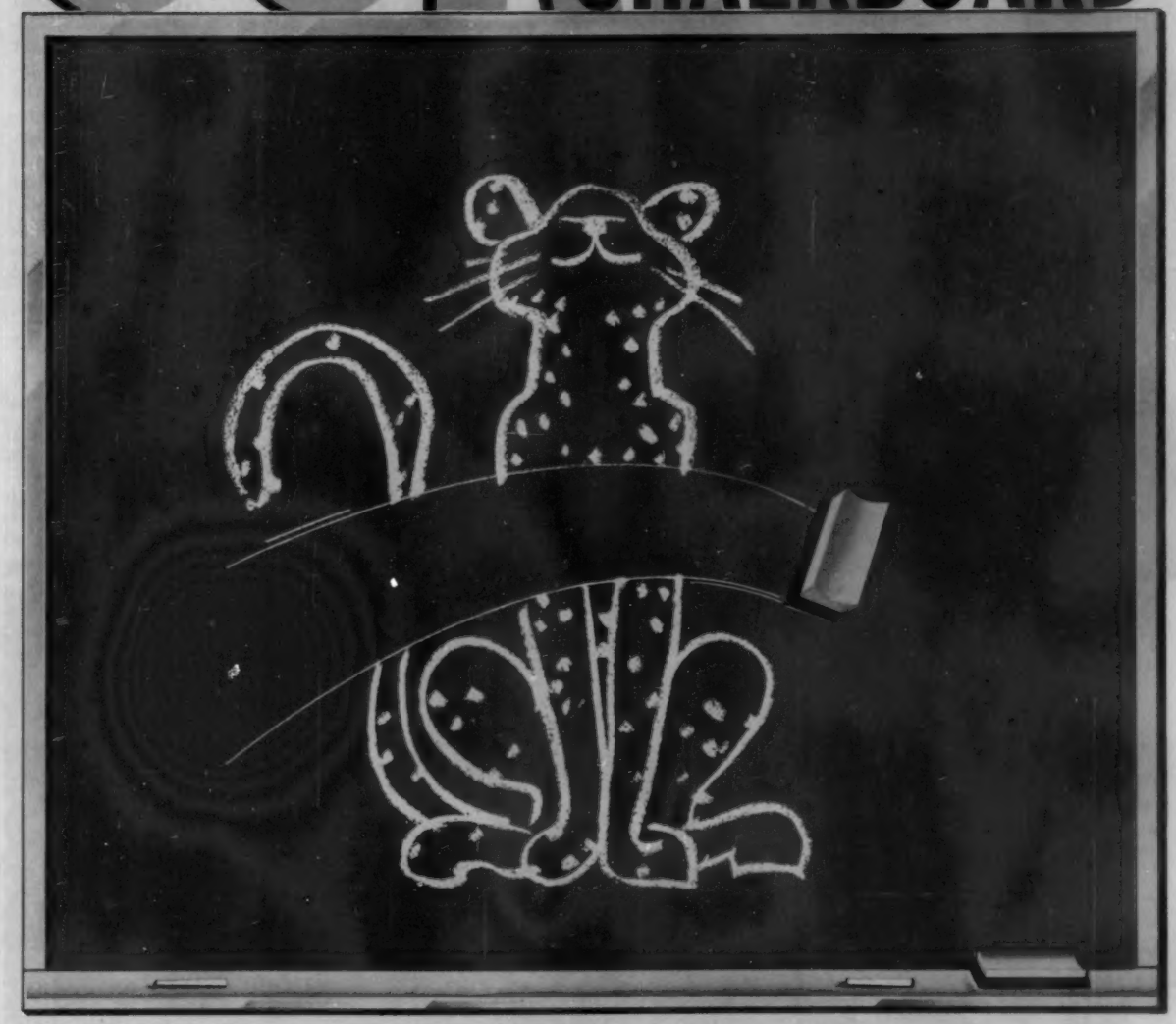

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Hospitals Meet to Discuss Psychiatric Units

This year's convention of the Association of Western Hospitals, scheduled to meet April 21-24 in San Francisco, will feature a panel discussion on April 22 by architects and hospital specialists on "The Design and Planning of Neuro-Psychiatric Facilities in the General Hospital"—indicating a trend toward integrating certain psychiatric treatments in the general hospital program.

On the panel will be Dr. Harold D. Chope, director of Health and Welfare, San Mateo County, Calif., on the role of the general hospital in treatment of mental disorders; Dr. Calvin Young of the Community Hospital, San Mateo, on variations of types of neuropsychiatric treatment as they affect planning; Muriel van Bleck, chief occupational therapist, Palo Alto Veterans Hospital, on facilities needed in the general hospital for occupational therapy treatment; Sara Bodlinghouse, Community Hospital, San Mateo, on the effect on planning of outpatient treatment and follow-up; Norman Moore, hospital consultant, on the facilities and services which should be provided in the general hospital for neuropsychiatric patients; and Mitchell van Bourg, Berkeley, Calif., architect, who will also moderate the panel, on the environmental design factors as they may affect patients, staff, and visitors.

An exhibition of architects' work in the hospital field, sponsored jointly by A. W. H. and the Northern California chapter, A.I.A., will be held in conjunction with the panel discussion.

Phoenix to Get Lease-Purchase Federal Building

Architects have been selected for the design of a new $8,600,000 Court House and Federal Office Building, to be built in Phoenix, Arizona, under the lease-purchase program, according to the General Services Administration. They are Edward L. Varney Associates and Lescher & Mahoney, both of Phoenix. They will prepare preliminary drawings, with an option for preparation later of working drawings and specifications. Preliminary drawings will be ready within five months, the architects estimate.

The Phoenix project calls for construction of a multistoried, air conditioned building in the block between North First and North Second Avenues and West Van Buren and West Monroe Streets. The building will be occupied by the U. S. District Courts, Veterans Administration, Housing and Home Finance Agency, and the Departments of Agriculture, Interior, Justice, Treasury, and Health, Education and Welfare.

Portland's Lloyd Center to Start Soon

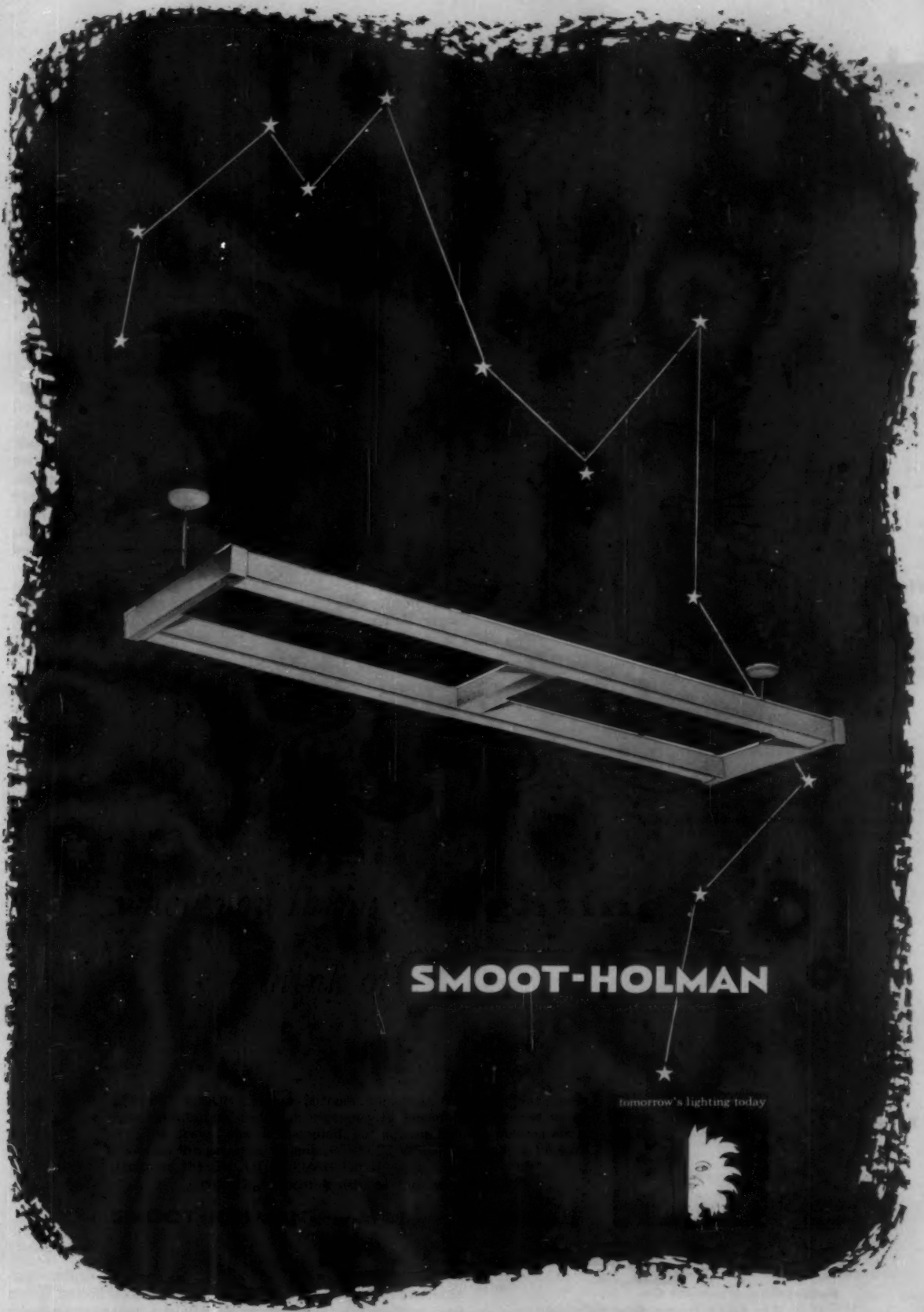
A huge new in-town shopping center, whose construction had been promised for the past eight years, is due to be started in Portland, Ore., shortly. When completed, it will not only be Portland's largest such center but one of the country's largest. John Graham and Co., Seattle, are architects and engineers.

Lloyd Center's location in the geographical center of Portland puts it also in the center of the metropolitan population. Although it is thus accessible to public transportation, the center's sponsors are taking no chances on the use of private transportation. They are providing a three-level garage with space for parking 8500 cars, connected by escalators with shopping malls and stores.

Neon signs will be banned from the center. So will raw concrete walls. Surfacing materials include a variety of substances such as aluminum, stone, wood, metals, and ceramics.

The center will contain four large department stores,

continued on page 48-14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Portland's Lloyd Center

continued from page 48-12

two supermarkets, numerous small shops, a medical-dental building, and a hotel. The department stores will be focal points for the two shopping malls, which will be laid out in a large T. Each mall will have two levels.

Another A-Power Plant for California

Successful operation of General Electric's Vallecitos, Calif., power reactor has led Pacific Gas & Electric Company to formulate plans for construction of a privately financed 60,000 kilowatt atomic power plant near Eureka, Calif. The 5000 kilowatt Vallecitos reactor plant has been producing power at eight mills per kilowatt, a rate which would be competitive in the Eureka area.

The Eureka plant is expected to cost around $20,000,000, some nine million more than a conventional plant. The conventional plant would require higher cost fuel-oil however, and this would offset the lower construction cost. The Eureka area is a favorable location for an atomic power plant because of the high fuel cost and because much of its power must be brought from other areas.

Such a plant is not now economically feasible where these other factors do not combine to make for a high cost of conventional power. Hydroelectric plants in the Northwest, and steam plants along the coast and inland continue to be the principal means of producing power. Utah Power & Light Company, for instance, has just announced plans to build a $34,000,000 plant near Kemmerer, Wyo., to generate 150,000 kilowatts.

Hilton Closes Deal For SF Hotel

After two years of rumors that he would—or would not—build a hotel in San Francisco and that he had an option on this—or that—site, Conrad Hilton announced last month that he has bought a site in downtown San Francisco and that he will build a 1000-room hotel on it.

The new hotel will be located on a two-block site, near Union Square, bounded by O'Farrell, Mason, Ellis, and Taylor Streets. Neither architects nor date for construction start have been announced.

UC Dormitory construction to start

Construction got under way last month on the first two units of the University of California's new residence halls for the Berkeley campus and by the fall of 1959 will be ready to house 1696 students. Architects for the halls are Warnecke and Warnecke who won the design competition held in 1956.

Plans for the two groups are largely identical. Each will consist of four nine-story buildings, with housing for 212 students in each building and a central kitchen and dining service facilities. The buildings will be grouped around landscaped courtyards. Two buildings in each unit will be occupied by men and two by women students.

The two Berkeley residence halls are part of the University's statewide residence hall program that will house some 6200 students on six campuses. An $18 million Federal loan, a $12½ million State appropriation, and $4 million in University funds will finance this new construction.

Seattle Ponders New Bridges

Five routes for spanning Lake Washington, under consideration for some months, seem to have boiled down to a preference for a bridge parallel to the existing Lake

continued on page 48-20

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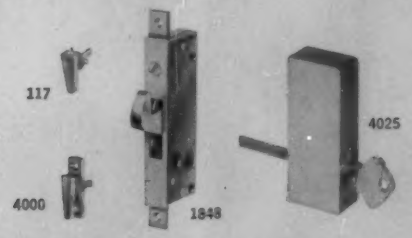

The 1848 Sliding Wall Deadlock shown above measures only 3¾" x 1⅛" x ½", has a collapsible bolt for protection of door and lock, and operates with positive "feel appeal". To compensate for possible misalignment of door and jamb, bolt projection can be adjusted a full 3/16" by simply turning a screw in the lock face. The 4025 cylinder group is a clean-lined outside pull, offering key control that can be keyed-in with most popular cylinder systems.

Specialists in Narrow Stile Locking Devices for Sliding and Swinging Glass Doors

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In addition to being the leading manufacturer of narrow stile sliding and swinging door locking devices, ADAMS-RITE also supplies virtually all the locking devices and handles for commercial and military aircraft in the United States—an overwhelming testimonial to the superiority of ADAMS-RITE design and the lasting strength of ADAMS-RITE products.

The sliding door manufacturers listed below are representative of those in the industry who provide ADAMS-RITE extra quality locking devices as standard equipment.

ABC SLIDING DOOR
Adams Engineering Company, Dept. G2
Box 936—Little River Branch, Miami 38, Florida

ALUMINAIRE
Aluminaire Company
1743 No. Country Club Drive, Mesa, California

PATI-SON
Aluminum Metals Company
1733 Sebastopol Road, Santa Rosa, California

CRESTVIEW
Kuminex, Inc.
2408 Forney Street, Los Angeles 31, California

YACOL
V. E. Anderson Mfg. Co., Inc.
P. O. Box 430, Bradenton, Florida

BU-VU
Bailey-Kelleher Company
500 Bellevue, Detroit 7, Michigan

BELLEVUE DELUX STEEL
BELLEVUE DELUX ALUMINUM, RAMONA
Bellevue Metal Products
1314 E. First Street, Los Angeles 33, California

SILVSPRAY LONE STAR
Binswanger & Co. of Texas
P. O. Box 3051, Houston 1, Texas

BRITT DELUXE
Britt Sliding Door Corporation
2501 Winston Road, Houston 5, Texas

BELLA VISTA, BELLA'S CHAMP
Bur-Val Mfg. Co., Inc.
1012 No. Lake Street, Burbank, California

FLEETLITE
Fleet of America, Inc.
2015 Walden Avenue, Buffalo 25, New York

GLAMOUR
Glamour-Glass Wall-Door Corporation
3040 W. Lawrence Avenue, Chicago 25, Illinois

G. S. D.
Glass Shower Door Co., Inc.
105 W. Wacker Drive, Chicago 1, Illinois

CORONA
H & D, Inc.
6515 Highway 99 So., Everett, Washington

ARTDOR by Bassen
Hecker Mfg. Co.
758 Clementina Street, San Francisco, California

THE HELLER DOOR, EL PATIO
The Heller Company
715 Francis Street, Houston, Texas

CAPISTRANO, MALIBU
Malibu Mfg. Corporation
P. O. Box 413
El Monte, California

PRESTIGE SERIES
Marshall Aluminum Products
3400 Fowler Street, Los Angeles, California

ARISLIDE
Michel & Pfeffer Iron Works, Inc.
212 Shaw Road, South San Francisco, California

MODERNVIEW
Modern Shower Door Company
1804 E. 40th Street, Cleveland 3, Ohio

NUDOR, 4 CDs
Nudor Mfg. Corporation
7326 Fulton Avenue, North Hollywood, California

PITTCO
Pittsburgh Plate Glass Company
One Gateway Center, Pittsburgh 22, Pennsylvania

ROMAN, CHALLENGER
Roman Metals Products, Inc.
P. O. Box 4477, Tucson, Arizona

RUSCO DELUXE, RUSCO THERMODOOR
F. C. Russell Company
P. O. Box 26, Columbiana, Ohio

TOBA VISTA
Samuels Glass Company
221 Newell Avenue, San Antonio 6, Texas

VUE LUNE, BON AIR, DE VILLE and EL DORADO
Shower Door Company of America
1 Permalume Place, N.W., Atlanta 18, Georgia

SLIDEVIEW
Slideview Door & Window Company
P. O. Box 409, El Monte, California

CUSTOM, CUSTOM INSULATED
Smithcare Corporation
P. O. Box 596, Magnolia, Arkansas

SALCO
Southern Sash Wholesale, Inc.
818 — 20th Street, Sheffield, Alabama

IMPERIAL, SENIOR & JUNIOR
Sun Valley Industries, Inc.
8354 San Fernando Road, Sun Valley, California

SPECIALDOR
Specialume Products, Inc.
No. Highway 301, P. O. Box 126, Sarasota, Florida

ALL STEEL QUALITY, STEEL FRAME ALUMINUM
Steelbilt, Inc.
18001 So. Figueroa, Gardena, California

SILVERNAIL
St. Petersburg Glass & Mfg. Co.
2201 First Avenue So., St. Petersburg, Florida

VISTA
Vista Sliding Doors
7052 Laurel Canyon, North Hollywood, California

CAPRI CONTINENTAL
T. V. Walker & Son, Inc.
217 No. Lake Street, Burbank, California

AER-LITE
Wood-Land Mfg. Co.
1510 W. Broadway, Phoenix, Arizona

3200
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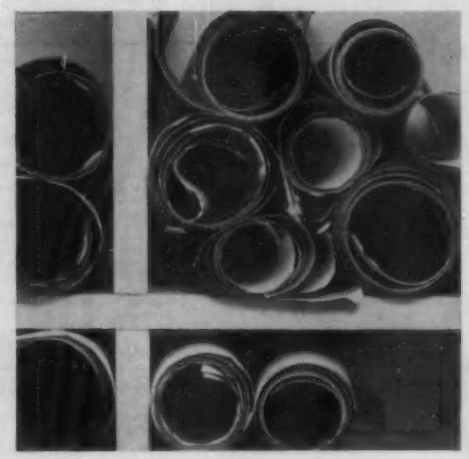

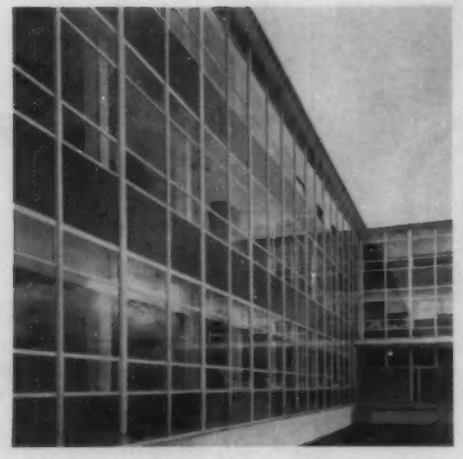

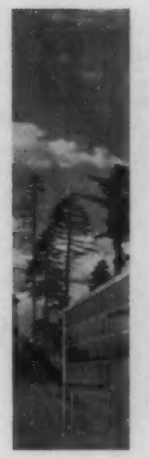

These photos are positive proof of the widespread acceptance and application of Soulé series 3200 aluminum curtain wall. 3200 offers simplicity in design and engineering (there are only four basic components—sill, mullion, spline and anchorage), positive weather sealing and superior quality at competitive costs. 3200 gives the architect freedom to use most panel types and either Soulé series 900 or 900 weather-stripped window inserts. Call or write your nearest Soulé office for a complete series 3200 aluminum curtain wall presentation, today.

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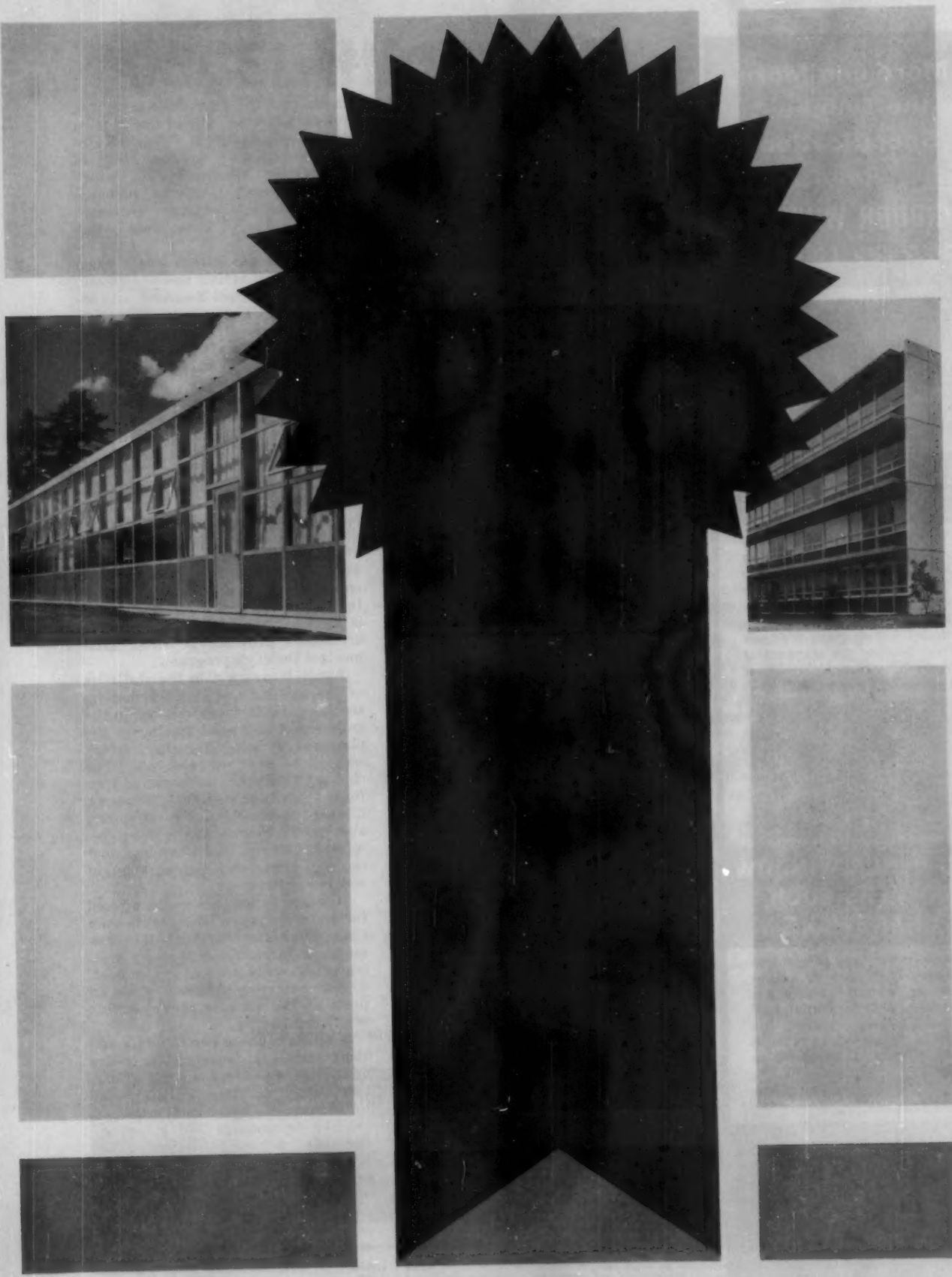

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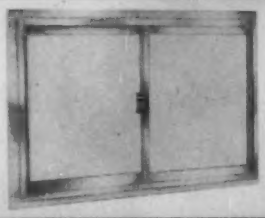

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Waste Space

I love to see, when leaves depart,
The clear anatomy arrive,
Winter, the paragon of art
That kills all forms of life
Save what is pure and will survive.
—Roy Campbell

Winter with its white silence in the mountains and on the inland plains, its suspended activity, its long nights and short days—winter sometimes, to some, is a dread time. But it's also a good time to recapitulate the busyness of summer, to take a long look at the intents of fall, to start planning for spring—to see "what is pure and will survive." And that's the way two Northwest groups—the A.I.A. chapters in Montana and Idaho—viewed it. They made special occasions of their annual winter meetings—occasions for fellowship and for new ideas as well as for transacting chapter business.

The first of these winter meetings, held at Billings, Mont. February 8, drew some 60 architects from all over the state, most of whom brought their wives. Together with guests and exhibitors, there were well over 125 in attendance. After the morning's chapter meeting, the men had their own luncheon meeting with a talk from regional director Donald Stewart of Portland, and the women had theirs with a talk on contemporary residential architecture. Both groups joined for the afternoon's session, arranged by chapter president Oswald Berg, Jr., of Bozeman and chairman John Toohey of Billings, on "The responsibility of the architect and the A.I.A. to the community" in which the mayor of Billings, the president of the Billings Chamber of Commerce and the Billings planning director, Ron Thompson, took part. These lay dignitaries really opened the eyes of the profession as to how architects are regarded by their fellow citizens.

The topic gave wide range to the discussion, which took in everything from service on planning commissions to how to practice architecture ethically.

Idaho, combining its chapter meeting, Board of Examiners meeting and a winter program, chose "Arts, Crafts and Architecture," as the theme of its statewide conference on March 15 in Boise, and got a rousing turnout of some 90 registrants (three times the chapter membership), including architects, decorators, craftsmen and artists. It was a time and place for several firsts: the first such winter conference, the first assembly of artists, craftsmen and architects; the first time any Boise homes had been opened for a tour. And in all respects it was a successful innovation—a welcome break in the winter hibernation—in which chapter president Charles Johnston of Payette and program chairman Chet Shawver of Boise were prime movers.

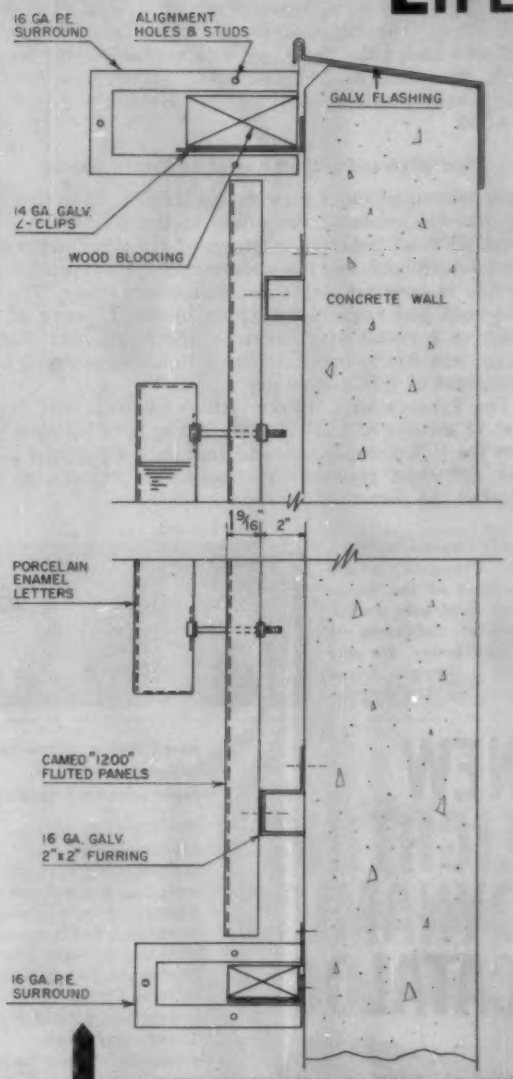
The principal session was a panel discussion by artists and craftsmen, moderated by Paul Roseland, a graduate of the University of Minnesota School of Architecture, of the role of each art or craft in architecture. Glass and plastics, ceramics and pottery, sand paintings (an unusual local craft) and landscape architecture were represented by James Bartell of Architectural Plastics, Eugene, Ore., Mrs. Aldrich Bowlers of Hagerman, Ida., Luther Douglas of Boise and Lloyd Bond of Eugene, respectively. A provocative challenge later on from Northwest regional director Donald J. Stewart that "out of destruction can come construction" and a reminder by the banquet speaker that the problem of integrating art in the architecture of today is as much the artist's as it is the architect's province to solve, summarized the day's program.

Again it was not in the statistics of the meeting's attendance that its success could be measured, but in the enthusiasm and good spirits, in the pleasure of being together, which seemed to overflow everyone. The chance to visit the new homes of four Boise architects—Chet Shawver, Charles Hummel, Anton Dropping and Curtis Finch—was a not-to-be-missed opportunity, and an idea that regional conference planners might well remember.

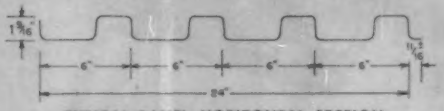
Montana's members are scattered far and wide over a larger state than Idaho, but Idaho is pretty well broken up by an incredible wilderness area, traversible only on foot or by boat, so that gathering architects from all parts of the state is indeed a feat worth mentioning.

A salute to these two chapters and their members for their initiative and imagination in bringing in outside stimuli to areas which greatly need them. The big coastal cities are exposed to comings and goings all the time; not so the inland cities, which although not remote are less accessible (either physically or by attitudes of mind) than the metropolitan areas. Importing and exporting are two facets of the same operation, and if you can do one and can't do the other, do what you can. Montana and Idaho did. E. K. T.

PORCELAIN ENAMEL
LIFETIME DISPLAYS....



INSTALLATION DETAIL OF SIGNS AND PANELS



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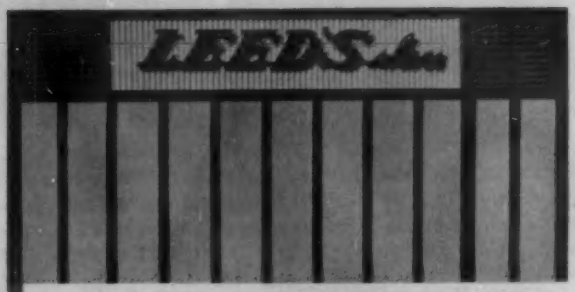

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Seattle Ponders New Bridges

continued from page 48-14

Washington floating bridge. The present bridge is not only inadequate for peak hour loads but was designed with a "bulge"—where the draw span is located.

A two-bridge "package plan" proposed by the State Toll Bridge Authority would first build a bridge from Evergreen Point to the Montlake section of Seattle, then construct a bridge parallel to the floating bridge. This plan, however, would require restoration of tolls on the present bridge, and since approaches to it were partially financed by the federal government, Congress would have to enact legislation approving the toll restoration.

Where funds would come from to finance any bridge construction was not clear. For the last few years the city has had the feasibility of routes under study by a New York engineering firm, Coverdale and Colpitts.

West's Second Solar House under Construction

The second solar house to be built in the West is now under construction in Phoenix, Ariz., and is due for completion by late spring or early summer of this year. The house was designed by Peter Lee, a student at the University of Minnesota, who won the international competition held last year for design of a solar house.

The first solar house was completed last spring in Cherry Hills, a suburb of Denver, Colo., for Dr. George Löf, a Denver consulting engineer and authority on solar heating. James M. Hunter of Boulder, Colo., was the architect.

Like the Cherry Hills house, the Phoenix solar house will be a laboratory for solar heating. The house will contain a variety of instruments for determining the feasibility of heating by solar energy with a design of its kind. Recording instruments will note the amount of solar heat picked up by the collectors, the temperature in different parts of the house, the amount of power used in the heat pumps, circulating pumps and fans, and the amount of solar heat that falls on the house.

The collectors—which are an integral part of the design of the house—are connected to an insulated tank underground where water will be stored which can be used to heat the house at night or during sunless days. A heat pump system will provide auxiliary heat for prolonged cold spells, and can be reversed to provide summer cooling.

Some new products and some old products applied to new uses will be a part of the Phoenix house. A new polyester film will be stretched across the heat collectors; a dacron material will be used as insulation for them. A new black paint, specially developed, will coat the copper surfaces of the "tube-in-strip" which will carry the water to be heated by solar energy.

Well anyway, let's see the skyline

Although the Embarcadero freeway—running right in front of San Francisco's Ferry Building—couldn't be stopped, some effort is being expended to prevent it from becoming an anchorage for billboards.

The current fight against billboards is being waged through the Board of Supervisors who are considering two bills, one prohibiting billboards adjacent to landscaped freeways, the other banning billboards which would obstruct scenic views.

How the Embarcadero freeway could come under the first of these is anybody's guess. Proposals to disguise the "double deck monstrosity," as it is locally called, vary from "planting of ivy and trees" to "making it look like the Ferry Building." But it might benefit from the second measure since the view from the freeway will be the only esthetic gain for the city.

Already half finished, the freeway is the first double deck highway in California. Each deck is 52 ft wide and will carry four lanes of traffic. The State Belt railway will run under the freeway, with surface traffic lanes on each side. The project, including approaches from the Bay Shore Freeway and the Bay Bridge will cost $15,000,000.

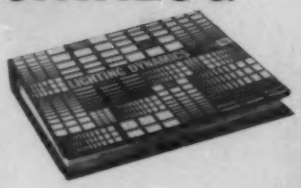
Imported plywood not cause of industry slump

Underconsumption of plywood manufactured in this country was the cause of the slump in the Northwest's softwood plywood industry, a group of Oregon Congressmen have determined, and the underconsumption resulted from decline in housing starts in the last two years. The Congressmen had requested a study by the Library of Congress as a result of charges in the Northwest that the slump was due to importation of Japanese plywood to the detriment of U.S. companies.

The Library of Congress' study showed that for the first 11 months of 1957 783,000,000 sq ft of plywood came into the U.S. from Japan, and that only 4 per cent of this was softwood plywood—too small an amount to have affected the domestic plywood industry.

Henry Degenkolb *(left)*, San Francisco, named president of the Structural Engineers Association of California at its convention. He succeeds Henry Layne *(right)* of Los Angeles

NEW LIGHTING DYNAMICS CATALOG



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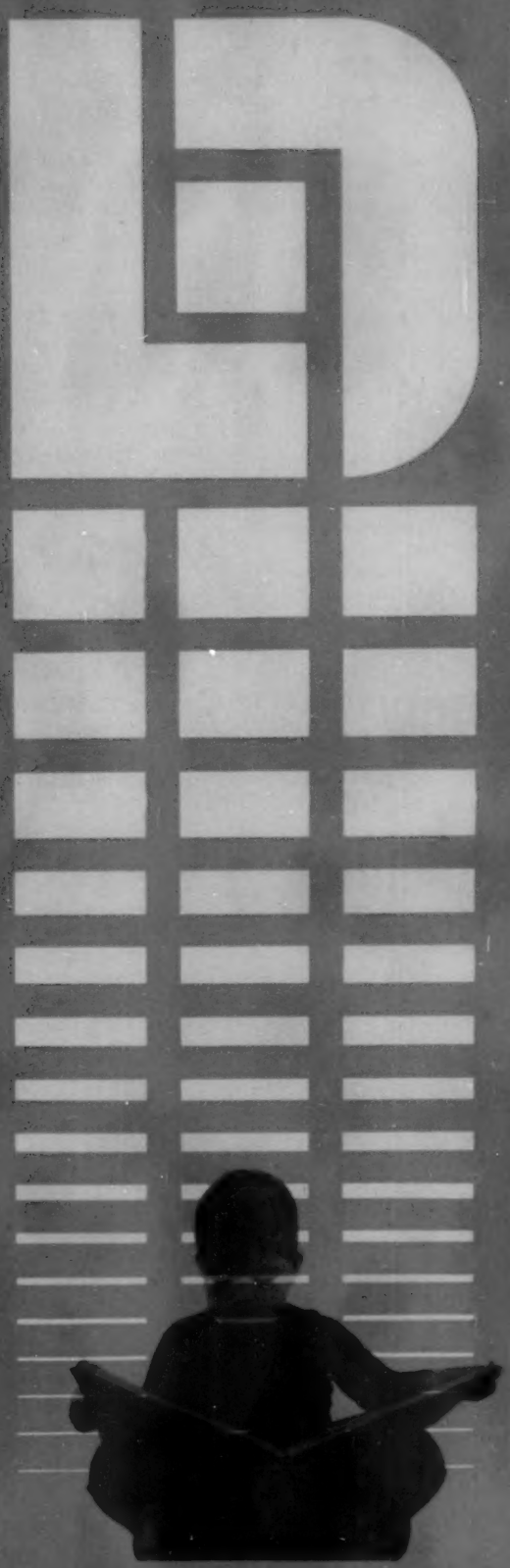

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News of the Profession

Elections: *David Sholder* of Phoenix is the new president of the Central Arizona chapter, A.I.A. Other new officers are *A. John Brenner*, vice president; *Jimmie R. Nunn*, secretary; *Kemper Goodwin*, treasurer; *Martin Ray Young, Jr.*, *Ralph Haver* and *James Elmore*, directors.

Awards: Church Architectural Guild of America awards have been made to *Robert Billsbrough Price*, Tacoma, Wash., for his Hope Lutheran Church in Tacoma, and to *George Vernon Russell*, Los Angeles, for his Cate School Chapel in Carpinteria, Calif.

New addresses, new offices: *A. O. Bumgardner*, architect, has moved to 2017 Broadway North, Seattle 2, Wash. *Bolt Beranek and Newman, Inc.*, consultants in acoustics with headquarters in Cambridge, Mass., have moved their western offices to 8271 Melrose Avenue, Los Angeles. *Cabell Gwathmey*, architect, has returned to California after an absence of some years, and is now a principal in the firm of Masten & Hurd, architects, of San Francisco.

Memorial tour of Maybeck Work in Bay Area

A tour of buildings of various types by the late A.I.A. Gold Medalist, Bernard Maybeck, will take place on Sunday, May 25 in three parts of the Bay Area; Marin County, San Francisco and the East Bay. Jointly sponsored by the Northern California chapter, A.I.A., and the San Francisco section, Women's Architectural League, the tour will commemorate the internationally known Bay Area architect who died last fall.

Included in the tour will be a talk on the architect at a designated center where a small exhibition will also be presented.

Calendar of Western Events

- April 11-12: Society of Architectural Historians, Pacific Coast Section, Spring Meeting; also Western Division Association of Collegiate Schools of Architecture, Lawrence Hall, University of Oregon, Eugene.
- April 21: Association of Western Hospitals, annual convention, Civic Auditorium, San Francisco.
- April 27-May 2: National Association of Architectural Metal Manufacturers' annual convention, Shamrock Hotel, Houston.
- April 27-May 17: "Arts of Southern California: Architecture," exhibit at College of Architecture, University of California, Berkeley.
- May 7-11: Western Air Conditioning, Heating, Ventilating and Refrigeration Exhibition and Conference, sponsored by Western Air Conditioning Industries Association, Shrine Exposition Hall, Los Angeles.
- May 26-27: Fourth Western Area Development Conference, sponsored by Stanford Research Institute, Vancouver, B. C.
- May 18: House Tour, Piedmont and Oakland, Calif. areas, Womens Architectural League, East Bay Section.
- June 2-5: American Nuclear Society, annual meeting, Los Angeles.
- June 12-22: Los Angeles Home Show, Pan Pacific Auditorium, Los Angeles.
- June 31-July 2: Association of Women in Architecture, convention, Los Angeles.

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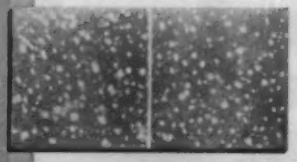

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WESTERN SECTION

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a Architectural File (green)
ic Industrial Construction File (blue)
lc Light Construction File (yellow)

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	American Air Filter Co. Inc.	48-6
	Bestile Manufacturing Co.	48-11
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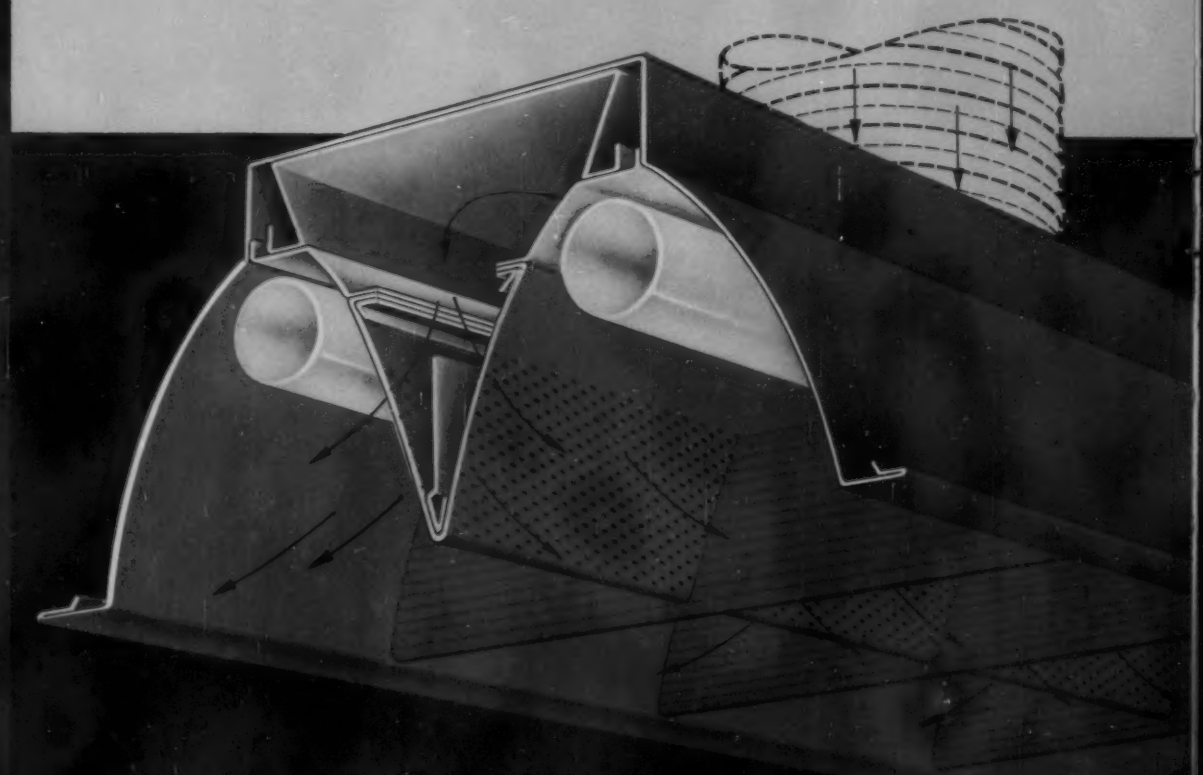
COMFORT LIGHTING the year 'round

CLEAN . . . UNCLUTTERED CEILINGS . . . combining high comfort illumination and air distribution into one attractive functional unit.



QUIET . . . SMUDGE-FREE AIR DISTRIBUTION . . . PERF-AIR-ATIONS throughout the entire length of Center "V" Louver diffuse conditioned air gently and evenly. Low pressure drop assures quiet operation. Controlled lateral deflection of air stream eliminates waterfall effect without ceiling smudge. Damper adjustable without removing louvers . . . PARAFLO is used with special components developed by the Uni-Flo Division of the Barber-Colman Company.

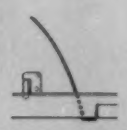
FLEXIBLE SPACE PLANNING

Here, from the pioneer in the development of the Ceiling Indexing System, is your most versatile choice for applications using movable partitions. Modular PARAFLO can be installed in any suspended ceiling. Compatible with more than 90 different ceiling suspension systems.

Permits greater freedom in future arrangement of partitions because air flow components can be quickly installed or interchanged . . . You air-condition as you light-condition for cleaner design, simplified mechanical planning, and easier installation.

SYSTEM "F" Flange troffers for use with acoustical ceilings using Concealed Mechanical Suspension.

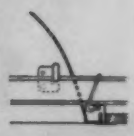
SYSTEM "G" Grid troffers for use with acoustical ceilings using Exposed Grid Suspension.



SYSTEM "L" Hook-on troffers for use with acoustical ceilings using Exposed Panel Suspension.

SYSTEM "M" Snap-in troffers for use with metal pan acoustical ceilings using "Tee-Bar" Suspension.

SYSTEM "P" Flange troffers for use with plaster ceilings using Concealed Mechanical Suspension.

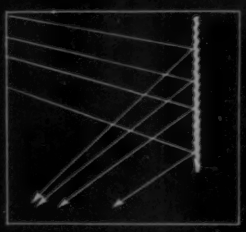


SYSTEM "R" Hook-on troffers for use with acoustical ceilings using Exposed Runner Suspension.

LOW-BRIGHTNESS COMFORT LIGHTING

Adapted from Day-Brite's exclusive Paralouver® Troffer, PARAFLO is shallow and light weight. Patented Paralouvers, combined with parabolic Alzak body and center "V", reduce brightness in the "glare zone". Available for use with two 4-foot Rapid-Start or two 8-foot Slimline lamps. Choice of diffuse aluminum with Paralouvers, or Super-White Baked Enamel with Paralouvers.

THIS IS HOW THE PARALOUVER WORKS . . . The light striking the louver is reflected in a controlled downward direction, out of the "glare zone".



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DAY-BRITE
Lighting Fixtures

developed by
Day-Brite and Barber-Colman

DAY-BRITE FIELD OFFICES

ALABAMA
James R. Fuller
Birmingham 9

ARIZONA
Wm. Benndorf Co.
Phoenix

CALIFORNIA
Day-Brite Lighting, Inc.
Beverly Hills
Alan Humphrey
Fresno
L. J. Van Nostrand
Sacramento 14
The Edward L. Peterson Co.
San Diego 1
James H. Brundage, Jr.
San Francisco 3
Day-Bright Lighting, Inc. of Calif.
Santa Clara

COLORADO
J. A. Reeves
Denver

CONNECTICUT
Frank E. Brown
Farmington

FLORIDA
Joseph N. Crevasse
Jacksonville
Gordon L. Priday
Jacksonville 11

FLORIDA *(continued)*
James A. Foerster
Miami 43
George N. Jack
Tampa

GEORGIA
Ruff & Cannon
Atlanta 1

ILLINOIS
C. B. Thorsen & Assoc., Inc.
Chicago 25
Dale I. Miller
Olympia Fields

INDIANA
Scott-Jaqua Company, Inc.
Indianapolis 4

IOWA
James H. Hull
Des Moines 11

KENTUCKY
C. Vance Terrell
Louisville 7

LOUISIANA
Paul Hogan, Jr.
New Orleans 12

MARYLAND
Samuel Masland, Jr.
Baltimore 17

MASSACHUSETTS
John V. Bradley
Sherborn

MICHIGAN
E. B. Wolf & Assoc.
Detroit 1
W. Dale Crites
Haslett

MINNESOTA
Jim Hallek
Minneapolis
Paul J. Murray
St. Paul 5

MISSOURI
M. H. Burwell Co.
Kansas City 8
Day-Brite Lighting, Inc.
St. Louis 7
E. H. Lauth & Associates, Inc.
St. Louis 10

NEBRASKA
Carl R. Price
Omaha 1

NEW MEXICO
Joe E. Pearce
Albuquerque

NEW JERSEY
Hauser & Hargis
Bloomfield

NEW YORK
Day-Brite Lighting, Inc.
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John C. Ringland
Rochester 11
Frank A. Caley
Syracuse

NORTH CAROLINA
Gordon Wells
Charlotte 2

OHIO
Greene & Warner
Cleveland 15
H. C. King
Cincinnati 37
Judson Lord
Columbus 12
Edward H. Unruh
Toledo 12

OKLAHOMA
Paul Sheline
Oklahoma City

OREGON
Ray M. Camnitz
Portland 8

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Hopkin Bros., Inc.
Philadelphia 6
Parke & Maguire
Pittsburgh 23

TENNESSEE
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Memphis 11
Joe Love Booker
Nashville 4

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H. A. Auchter
Dallas 2
N. O. Reed
Houston 6
Stewart O. Norris
Lubbock
Richard W. Barnes
San Antonio

UTAH
Jack Lowder
Salt Lake City

VIRGINIA
Earl Dagenhardt
Richmond 25

WASHINGTON
D. A. Olson Co.
Seattle 5

WISCONSIN
Earl H. Aik
Milwaukee 8
Robert M. Aik
Neenah

HAWAII
Matt A. Cabot
Honolulu 11

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Phoenix

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G. H. Avery Co. of Ark.
Little Rock

CALIFORNIA
Barber-Colman Company
Pasadena 2, San Diego
G. J. Yamas Co.
San Francisco 5, Sacramento

COLORADO
Automatic Control & Equipment Co.
Denver 11

CONNECTICUT
Johnson-Goodyer, Inc.
New Haven 3

FLORIDA
Barber-Colman Company
Jacksonville 7
George Brophy
Miami 33

GEORGIA
Barber-Colman Company
Atlanta 9

ILLINOIS
Barber-Colman Company
Chicago 26
Barber-Colman Company
Rockford

ILLINOIS *(continued)*
Barber-Colman Company
Rock Island
Barber-Colman Company
Springfield

INDIANA
Barber-Colman Company
Indianapolis 2
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IOWA
Deco Engineering Products
Des Moines 9

KANSAS
Ray F. Bauer Co.
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Barber-Colman Company
Louisville 4

LOUISIANA
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New Orleans 25
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Bethesda 14

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MICHIGAN
R. L. Deppmann Co.
Detroit 2, Grand Rapids, Saginaw

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Williams-Swanson Co.
Duluth 2
Uhl Company, Inc.
Minneapolis 2

MISSOURI
Barber-Colman Company
St. Louis 10, Kansas City

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Barber-Colman Company
Omaha 8

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Barber-Colman Company
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Slawson Equipment Co., Inc.
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OKLAHOMA
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Portland 14

PENNSYLVANIA
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Barber-Colman Company
Pittsburgh 34
DuRoss-Anderson Co., Inc.
Scranton 10

RHODE ISLAND
Barber-Colman Company
East Providence

SOUTH CAROLINA
Barber-Colman Company
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Both Day-Brite and Barber-Colman representatives have complete information on PARAFLO. For lighting data, write Day-Brite. For air distribution data, write Barber-Colman Co., Rockford, Ill.

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Lighting Fixtures

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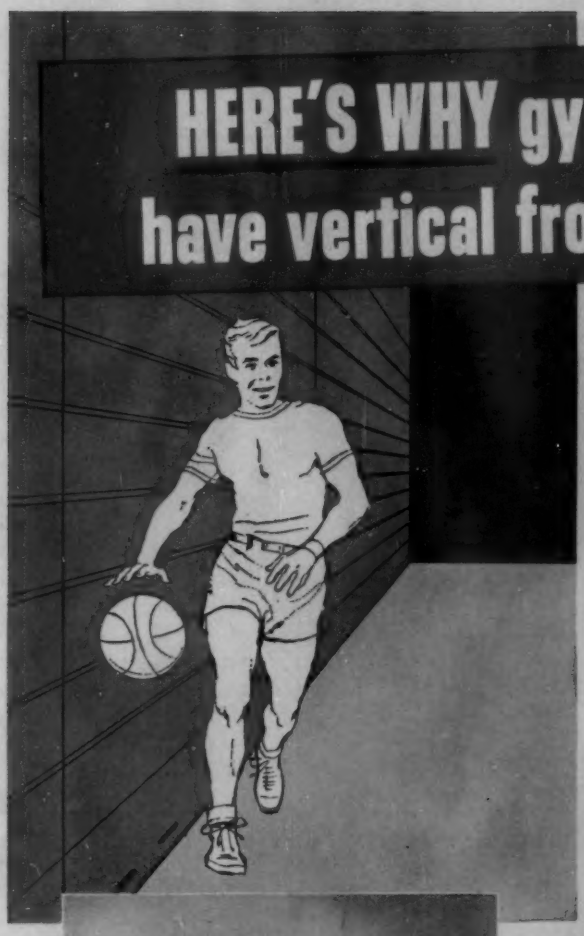
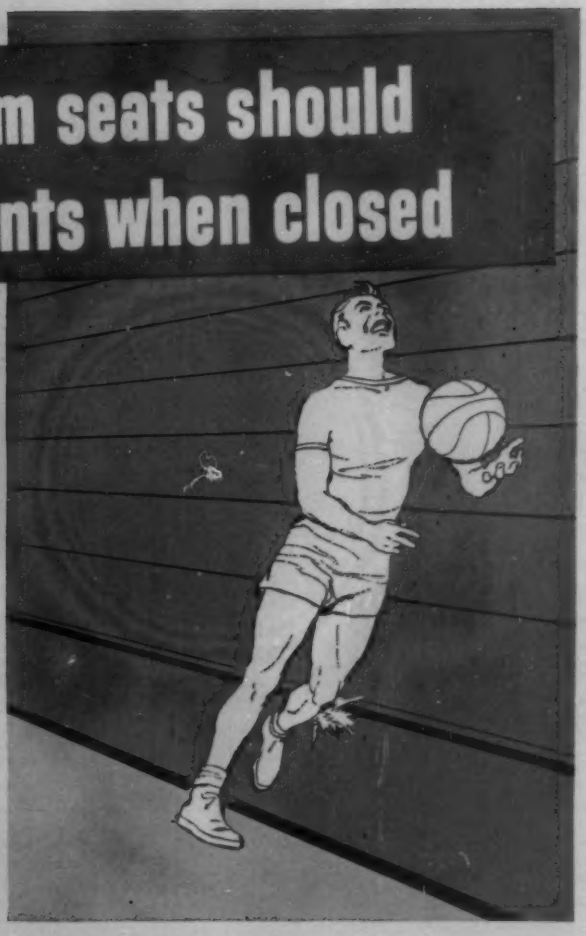
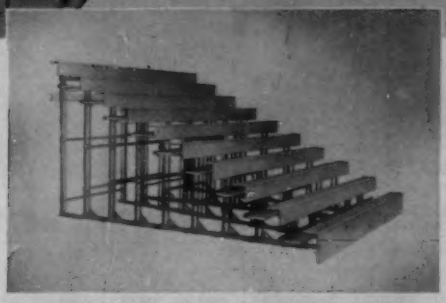
Day-Brite Lighting, Inc., of Calif., 530 Martin Ave., Santa Clara, Calif.

FORM OD-692 Printed in U. S. A., 2-58, 130M

HERE'S WHY gym seats should have vertical fronts when closed







Medart Telescopic Gym Seats can be furnished with 10½" or 11½" row rise and 22" or 24" row spacing.

EXCLUSIVE FULLY-AUTOMATIC POWER OPERATION IS AVAILABLE AT SMALL COST. (PATENTS PENDING.)

MEDART TELESCOPIC GYM SEATS have vertical fronts for the same reason that cabinets, lockers, desks—even walls and room dividers—are built with vertical surfaces from top to bottom. Seats that protrude more at floor level, than at waist or eye levels, fool the eyes and trip the feet. Vertical surfaces create no hazards; can't cause skinned shins and bruising falls.

Vertical fronts won't accumulate excessive dust like sloping surfaces—don't need constant cleaning.

Architecturally, Medart's vertical front seats raise no construction problem if seats are to be recessed; always present a good-looking, flush wood-panelled appearance.

MEDART SEATS HAVE MANY OTHER SUPERIOR FEATURES

1. Safer self-supporting free-standing understructure.
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5. More leg and foot room — better visibility.

IDEAS ON GYM SEATING!

Medart's Gym Seat Catalog tells how to get better, safer seating with minimum investment. Write for your copy.

MEDART MAKES THE WORLD'S FINEST

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Construction Cost Indexes

Presented by Clyde Shute, Director of Statistical Policy, Construction News Div., F. W. Dodge Corp., from data compiled by E. H. Boeckh & Assoc. Inc.

Labor and Materials: U.S. average 1926-1929=100

NEW YORK

PERIOD	RESIDENTIAL Brick	RESIDENTIAL Frame	APTS., HOTELS, OFFICE BLDGS. Brick and Concrete	COMMERCIAL AND FACTORY BLDGS. Brick and Concrete	COMMERCIAL AND FACTORY BLDGS. Brick and Steel
1930	127.0	126.7	124.1	128.0	123.6
1935	93.8	91.3	104.7	108.5	105.5
1939	123.5	122.4	130.7	133.4	130.1
1946	181.8	182.4	177.2	179.0	174.8
1947	219.3	222.0	207.6	207.5	203.8
1948	250.1	251.6	239.4	242.2	235.6
1949	243.7	240.8	242.8	246.6	240.0
1950	256.2	254.5	249.5	251.5	248.0
1951	273.2	271.3	263.7	265.2	262.2
1952	278.2	274.8	271.9	274.9	271.8
1953	281.3	277.2	281.0	286.0	282.0
1954	285.0	278.2	293.0	300.6	295.4
1955	293.1	286.0	300.0	308.3	302.4
1956	310.8	302.2	320.1	328.6	324.5
1957	318.5	308.3	333.1	345.2	339.8
Nov. 1957	320.1	309.6	336.9	349.1	344.9
Dec. 1957	319.9	309.4	336.6	348.9	344.7
Jan. 1958	321.5	310.1	339.2	352.9	347.8
	% increase over 1939				
Jan. 1958	160.3	153.3	159.5	164.5	167.3

ATLANTA

PERIOD	RESIDENTIAL Brick	RESIDENTIAL Frame	APTS., HOTELS, OFFICE BLDGS. Brick and Concrete	COMMERCIAL AND FACTORY BLDGS. Brick and Concrete	COMMERCIAL AND FACTORY BLDGS. Brick and Steel
1930	82.1	80.9	84.5	86.1	83.6
1935	72.3	67.9	84.0	87.1	85.1
1939	86.3	83.1	95.1	97.4	94.7
1946	148.1	149.2	136.8	136.4	135.1
1947	180.4	184.0	158.1	157.1	158.0
1948	199.2	202.5	178.8	178.8	178.8
1949	189.3	189.9	180.6	180.8	177.5
1950	194.3	196.2	185.4	183.7	185.0
1951	212.8	214.6	204.2	202.8	205.0
1952	218.8	221.0	212.8	210.1	214.3
1953	223.0	224.6	221.3	221.8	223.0
1954	219.6	219.1	233.5	225.2	225.4
1955	225.3	225.1	229.0	231.5	231.8
1956	237.2	235.7	241.7	244.4	246.4
1957	241.2	239.0	248.7	252.1	254.7
Nov. 1957	243.3	239.5	251.9	255.6	258.6
Dec. 1957	242.1	239.3	251.6	255.4	258.4
Jan. 1958	244.0	240.7	254.1	259.4	260.4
	% increase over 1939				
Jan. 1958	182.7	189.7	167.2	166.3	175.0

ST. LOUIS

1930	108.9	108.3	112.4	115.3	111.3
1935	95.1	90.1	104.1	108.3	105.4
1939	110.2	107.0	118.7	119.8	119.0
1946	167.1	167.4	159.1	161.1	158.1
1947	202.4	203.8	183.9	184.2	184.0
1948	227.9	231.2	207.7	210.0	208.1
1949	221.4	220.7	212.8	215.7	213.6
1950	232.8	230.7	221.9	225.3	222.8
1951	252.0	248.3	238.5	240.9	239.0
1952	259.1	253.2	249.7	255.0	249.6
1953	263.4	256.4	259.0	267.0	259.2
1954	266.6	260.2	263.7	273.3	266.2
1955	273.3	266.5	272.2	281.3	276.5
1956	288.7	280.3	287.9	299.2	293.3
1957	292.0	283.4	295.2	307.1	302.9
Nov. 1957	292.3	283.7	296.6	308.5	305.6
Dec. 1957	296.2	286.8	302.6	315.3	310.6
Jan. 1958	295.1	286.1	301.2	313.3	309.6
	% increase over 1939				
Jan. 1958	167.8	167.4	153.7	161.5	160.2

SAN FRANCISCO

1930	90.8	86.8	100.6	104.9	100.4
1935	89.5	84.5	96.4	103.7	99.7
1939	105.6	99.3	117.4	121.9	116.5
1946	159.7	157.5	157.9	159.3	160.0
1947	193.1	191.6	183.7	186.8	186.9
1948	218.9	216.6	208.3	214.7	211.1
1949	213.0	207.1	214.0	219.8	216.1
1950	227.0	223.1	222.4	224.5	222.6
1951	245.2	240.4	239.6	243.1	243.1
1952	250.2	245.0	245.6	248.7	249.6
1953	255.2	257.2	256.6	261.0	259.7
1954	257.4	249.2	264.1	272.5	267.2
1955	268.0	259.0	275.0	284.4	279.6
1956	279.0	270.0	288.9	298.6	295.8
1957	286.3	274.4	302.9	315.2	310.7
Nov. 1957	286.9	273.4	306.4	320.0	316.0
Dec. 1957	287.6	274.4	307.0	319.9	316.0
Jan. 1958	288.2	274.4	307.8	321.9	316.5
	% increase over 1939				
Jan. 1958	172.9	176.3	162.2	164.1	171.7

Cost comparisons, as percentage differences for any particular type of construction, are possible between localities, or periods of time within the same city, by dividing the difference between the two index numbers by one of them; i.e.:

index for city A = 110
index for city B = 95

(both indexes must be for the same type of construction).

Then: costs in A are approximately 16 per cent higher than in B.

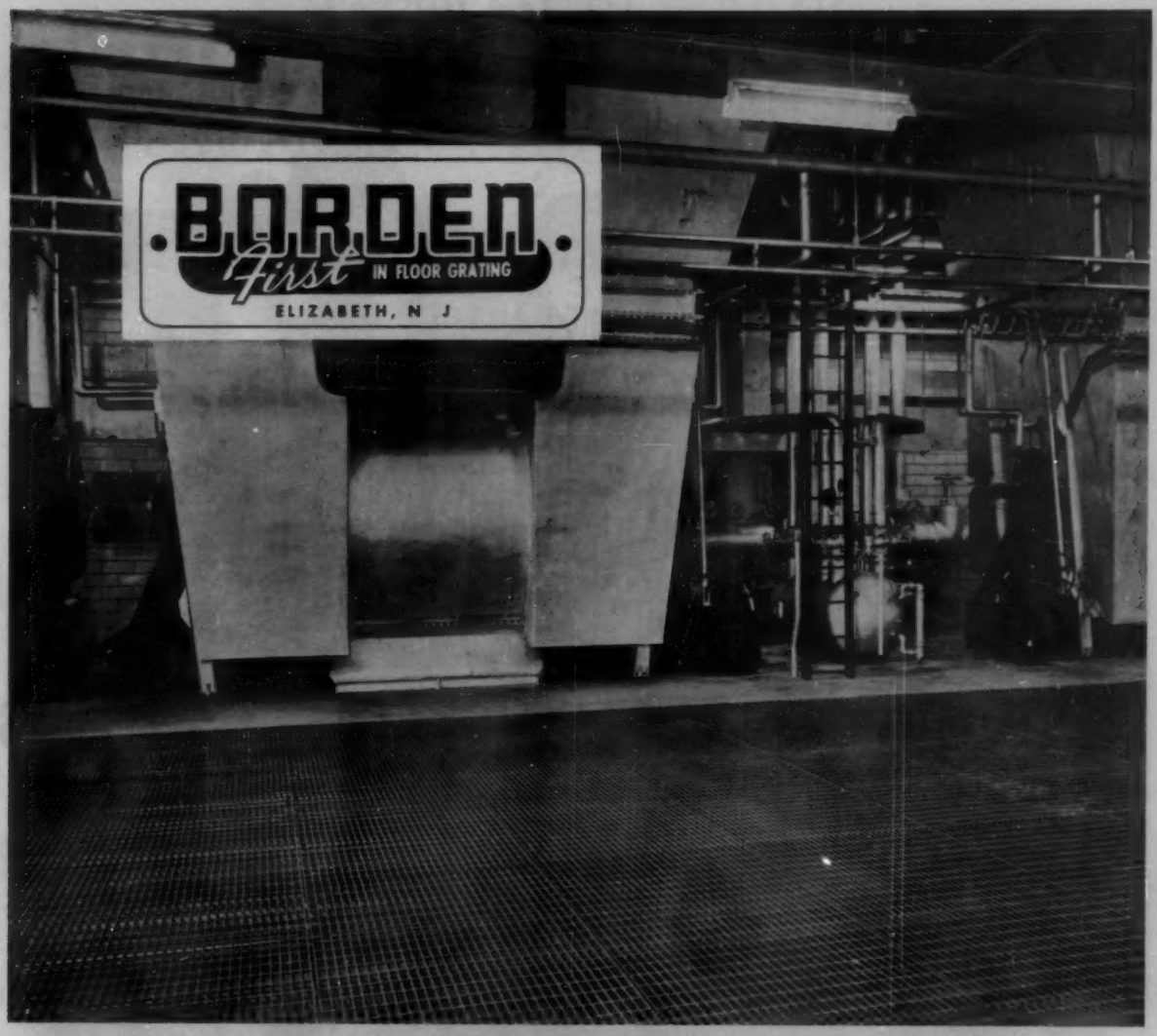
$$\frac{110-95}{95} = 0.158$$

Conversely: costs in B are approximately 14 per cent lower than in A.

$$\frac{110-95}{110} = 0.136$$

Cost comparisons cannot be made between different types of construction because the index numbers for each type relate to a different U. S. average for 1926-29.

Material prices and wage rates used in the current indexes make no allowance for payments in excess of published list prices, thus indexes reflect minimum costs and not necessarily actual costs.



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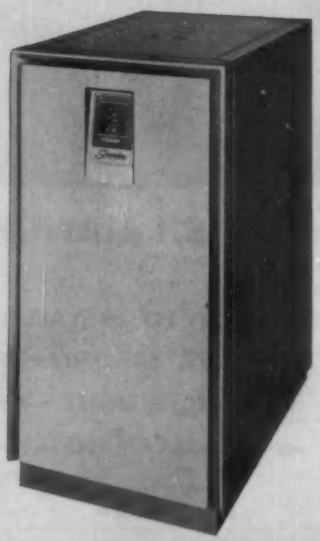

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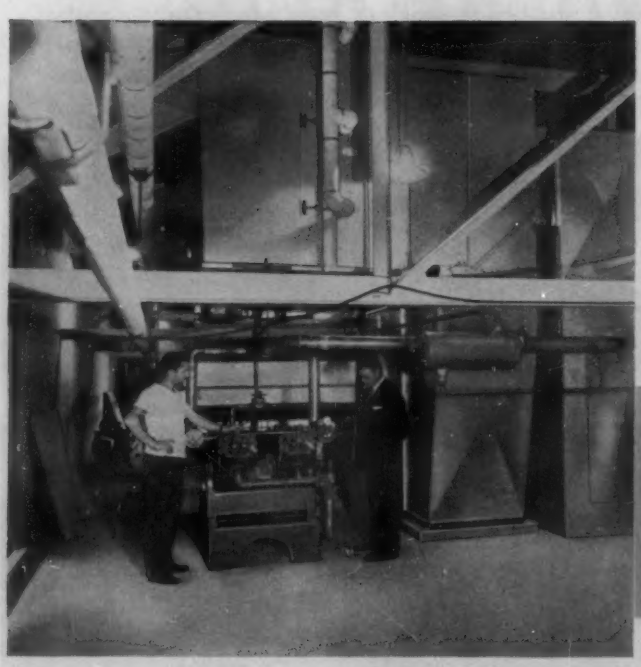
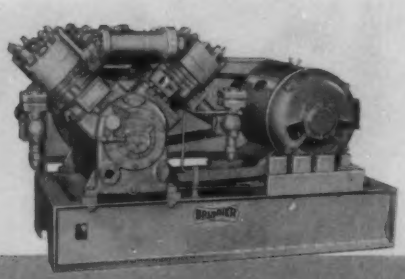
BRUNNER SINCE 1906





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75 HP compressors, 100 HP compressors—whatever the size requirement—there was a Brunner unit to satisfy the design conditions.

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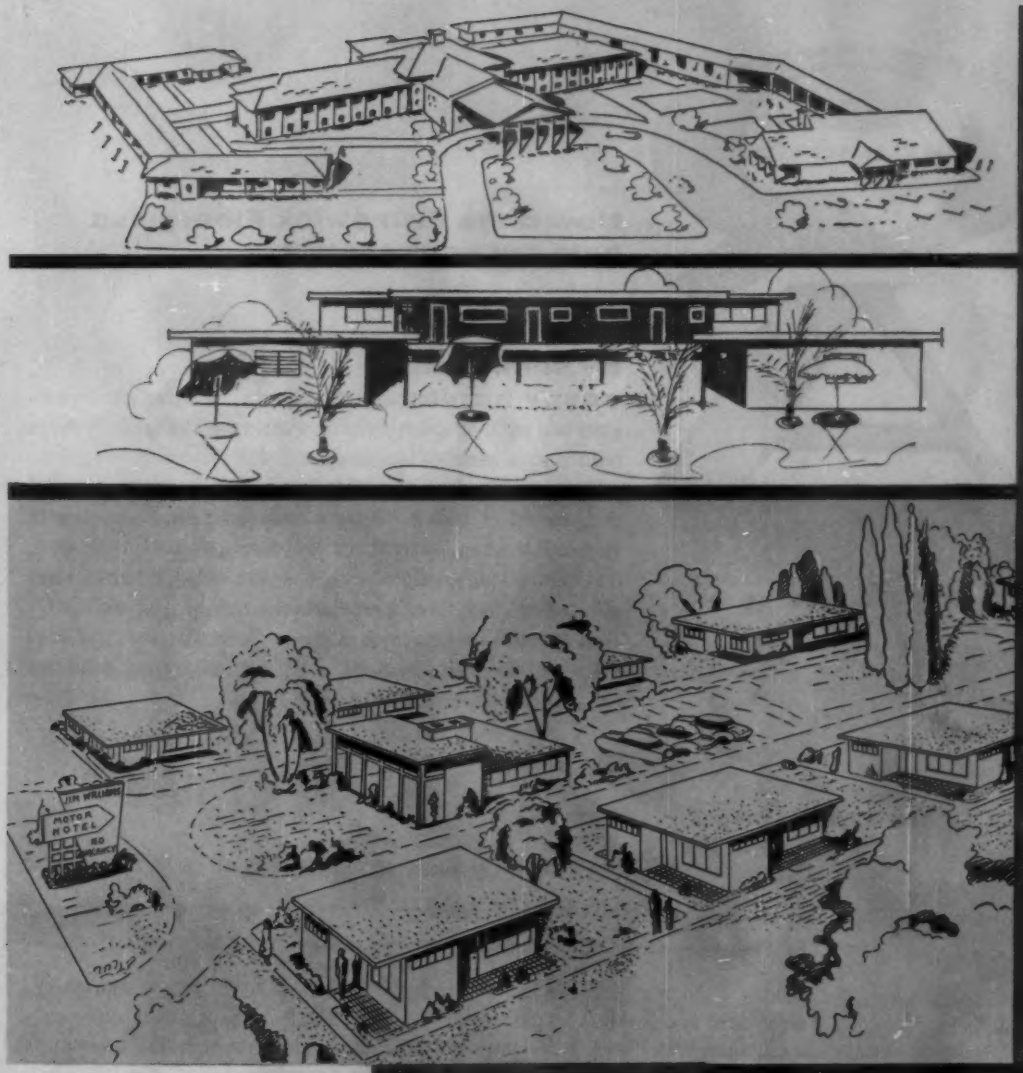

Top: LINCOLN LODGE—Columbus, Ohio
Owner: Peoples Development Co.
Center: WINDJAMMER MOTEL
St. Petersburg, Florida
Owner: Mr. Harold Turner
Bottom: JIM WILLIAMS MOTOR HOTEL
Grand Rapids, Michigan
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P & L Products Used: *New* Lyt-all Flowing Flat, Vitralite Enamel Eggshell, Effecto Enamel, "38" Pale Trim Varnish, and Pratt & Lambert House Paint

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SCHOOL FURNITURE

for better learning . . . for lasting service

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Engineered and produced by Brunswick for critical components of jet aircraft and missiles, Brunswick Fiberglass has been field tested for more than five years in schoolroom use. Its remarkable performance is a matter of record.

In bringing Fiberglass to *all* areas of the school, once again Brunswick—and *only* Brunswick—employs its vast technological experience and facility to serve the needs of American education.

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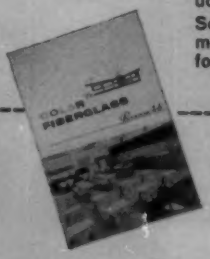

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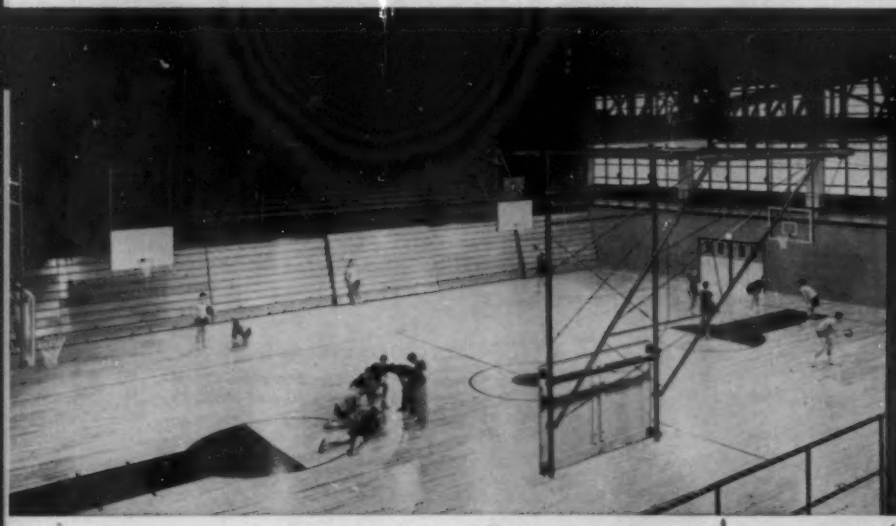
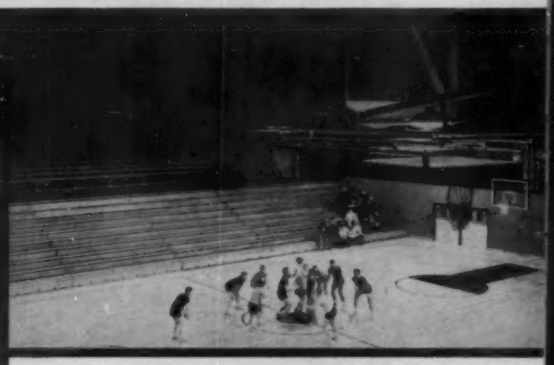
How can you install 3 Basketball Courts in a "One Court" area?

Ask your Architect. He's well acquainted with the complete line of "Self-Storing" Brunswick Folding Backstops. He knows that space saving Brunswick Backstops will not interfere with seating, partitions or other fixed equipment, that they store compactly flat—out of sight, out of play.

Whatever the space limitations or structural peculiarities of your proposed or current gymnasium, you'll find Brunswick Backstops give you a flexibility that enables you to double—or even triple—the number of playing courts. You'll like Brunswick's low original cost, maintenance-free service.





New Loyola Academy Gymnasium in Wilmette, Illinois demonstrates flexibility of Brunswick Folding Backstops. Note placement of Brunswick folding gym seats along side courts. Father J. Peter Buschmann, President; Naess & Murphy architects.

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Please send me more information on

- ☐ Brunswick BASKETBALL BACKSTOPS
- ☐ Brunswick Closet Walls
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RIGID IN PLAY
Exclusive Brunswick design puts stabilizers inside the frame—play area is completely free of cables and pull ropes.

SELF-CONTAINED STORAGE
A real space saver. Safe, simple manual or remote controls cannot be operated by unauthorized personnel.

WIDE VARIETY OF MODELS
You can use Brunswick Backstops in virtually any structural area. All models conform to Official Standards.

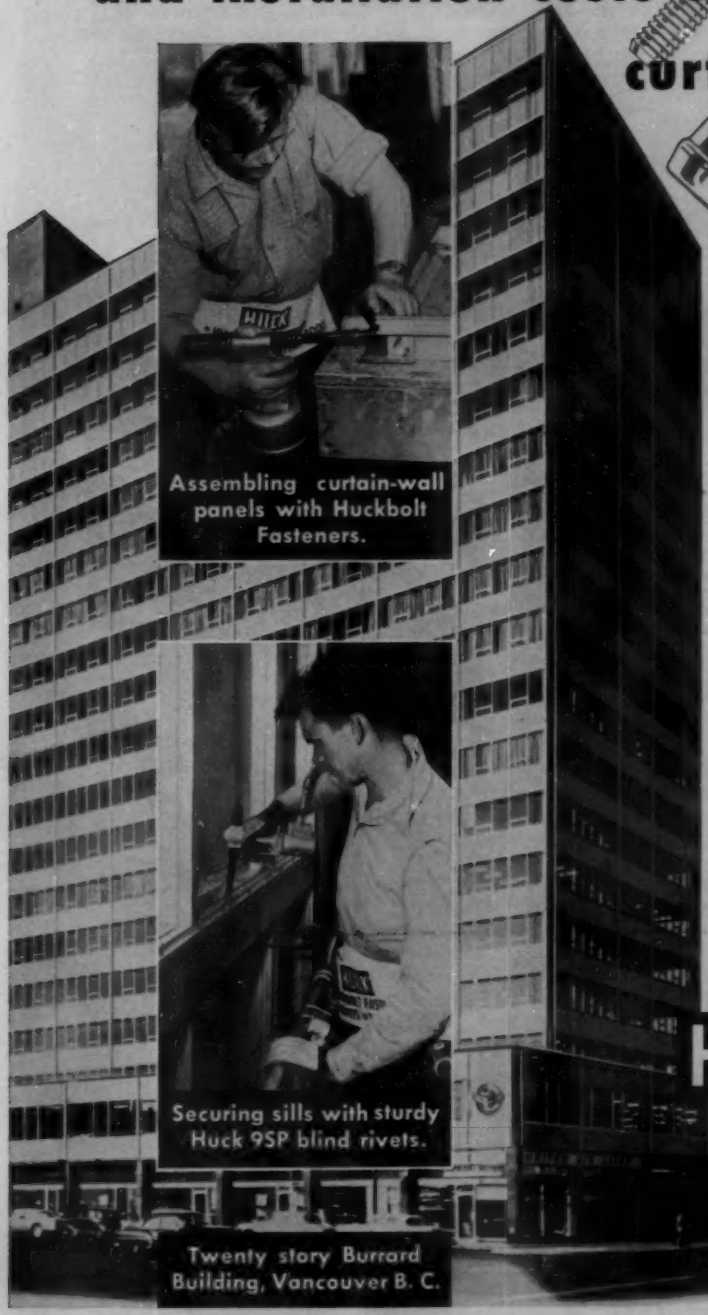
Specify Brunswick Backstops For Better In-Play Performance...Better Out-Of-Play Storage

HUCK FASTENERS

SAVE 50% on assembly and installation costs of Canada's biggest curtain-wall building!

Assembling curtain-wall panels with Huckbolt Fasteners.

Securing sills with sturdy Huck 9SP blind rivets.



Twenty story Burrard Building, Vancouver B. C.

HUCK 9SP and Huckbolt* fasteners were selected for:

- **Speed of attachment.**
- **Pull-up strength.**
- **Ease of installation.**
- **Corrosion resistance.**

The Burrard Building curtain-wall consists of four hundred fifty, 18′ x 11′ panels preassembled on the ground with sturdy Huckbolt fasteners and hoisted into position where they were quickly and easily installed with HUCK 9SP fasteners of A17ST aluminum.

Panels were assembled with speed and ease on table jigs by unskilled labor. The HUCK fasteners were cold driven with HUCK pneumatic tools imparting a high tensile preload which prevented distortion in handling and resulted in unusual rigidity of the overall installation.

Complete details of this installation or information on the many advantages of HUCK fasteners in building construction are available on request.

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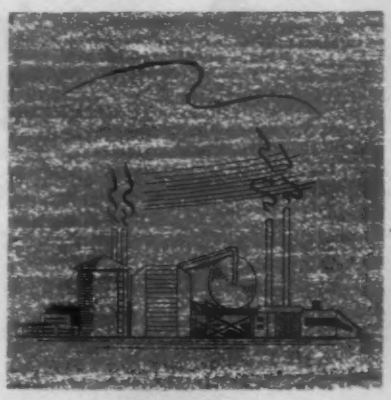
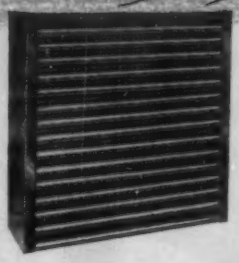


3—PURIFIES COMMERCIALLY CONTAMINATED OUTSIDE AIR (SMOG)

SPECIFICATIONS			
	No. 28	**No. 42**	**No. 52**
Size (Face Dimensions)	24" x 24"	24" x 24"	24" x 24"
Depth (in dir. of Air Flow)	8¾"	8¾"	8¾"
Maximum Capacity	1000 CFM	700 CFM	1000 CFM
Carbon Bed Thickness	½"	¾"	½"
Approx. Weight of Carbon	36 lbs.	45 lbs.	45 lbs.
Resistance*	0.225" WG	0.285" WG	0.24" WG
Efficiency	95%	95%	95%
Net Weight (cell only)	87 lbs.	92 lbs.	97 lbs.
Shipping Weight	110 lbs.	115 lbs.	120 lbs.

*The resistance of Dorex C Cells will not vary provided they are protected against dust accumulation.



THE DOREX NO. 52 CELL... NEWEST ADDITION TO THE COMPLETE DOREX LINE.

You can depend on a specially designed Dorex unit to solve your particular air purification problem . . . whether your problem is 1 . . . 2 . . . or 3.

Dorex specialists, with more than a quarter century of experience and research in design and development of air recovery equipment, make the right recommendation . . . whatever the situation.

Dorex air purification units solve your problem. Dorex *Service Engineers* keep it solved . . . keep your system in continuous operation through a time-proven automatic reactivation-replacement program. Strategically located reactivation stations are maintained throughout the United States and Canada.

With each installation, Dorex assumes responsibility for economical and efficient operation . . . a responsibility lived up to for years for thousands of Dorex users.

For the best in air recovery products, insist on Dorex. Write for recommendations to solve your problem.

CONNOR... for Constant Comfort Conditions

Write for "Air Conservation Engineering"... the authoritative text on air purification.

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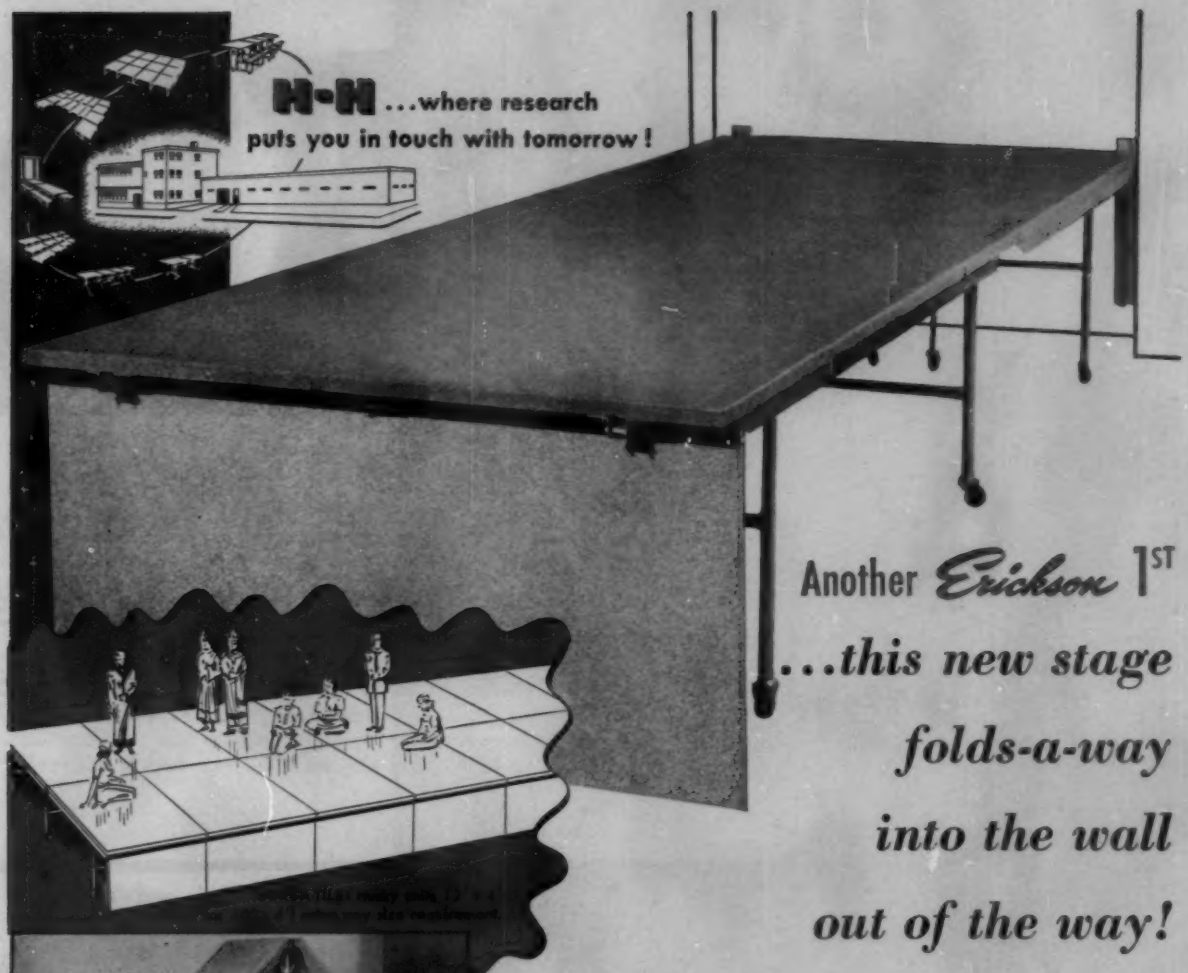
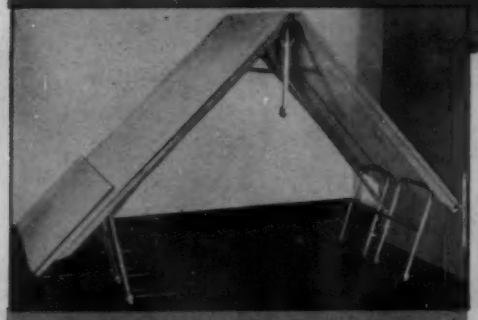


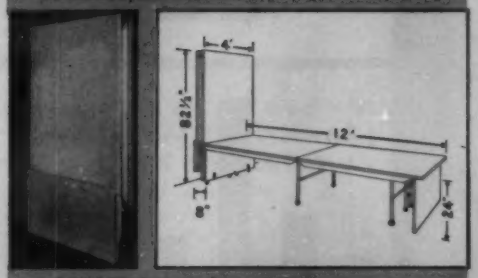
Another *Erickson* 1ST

...this new stage folds-a-way into the wall out of the way!

This new stage unfolds out of the wall in seconds . . . ready for use. When not needed this new stage quickly folds-a-way . . . out of the way . . . giving you use of *all* the floor space in your gym or multi-use room.



AUTOMATIC! Each unit sets up by itself thanks to automatic hydraulic action!



COMPACT! Each unit folds-a-way into shallow recess only 8" deep, or may be mounted on wall. Drawing shows stage folded and unfolded.

Erickson FOLD-A-WAY PRODUCTS FOR MULTI-USE OF SPACE

Dale Riemann

HALDEMAN HOMME MFG. CO.

Dept. AR-4 2580 University Ave., St. Paul 14, Minn. • Midway 5-6465

Gentlemen:
Please send complete information on your new Erickson in-wall fold-a-way stage.

NAME_____ TITLE_____

SCHOOL_____

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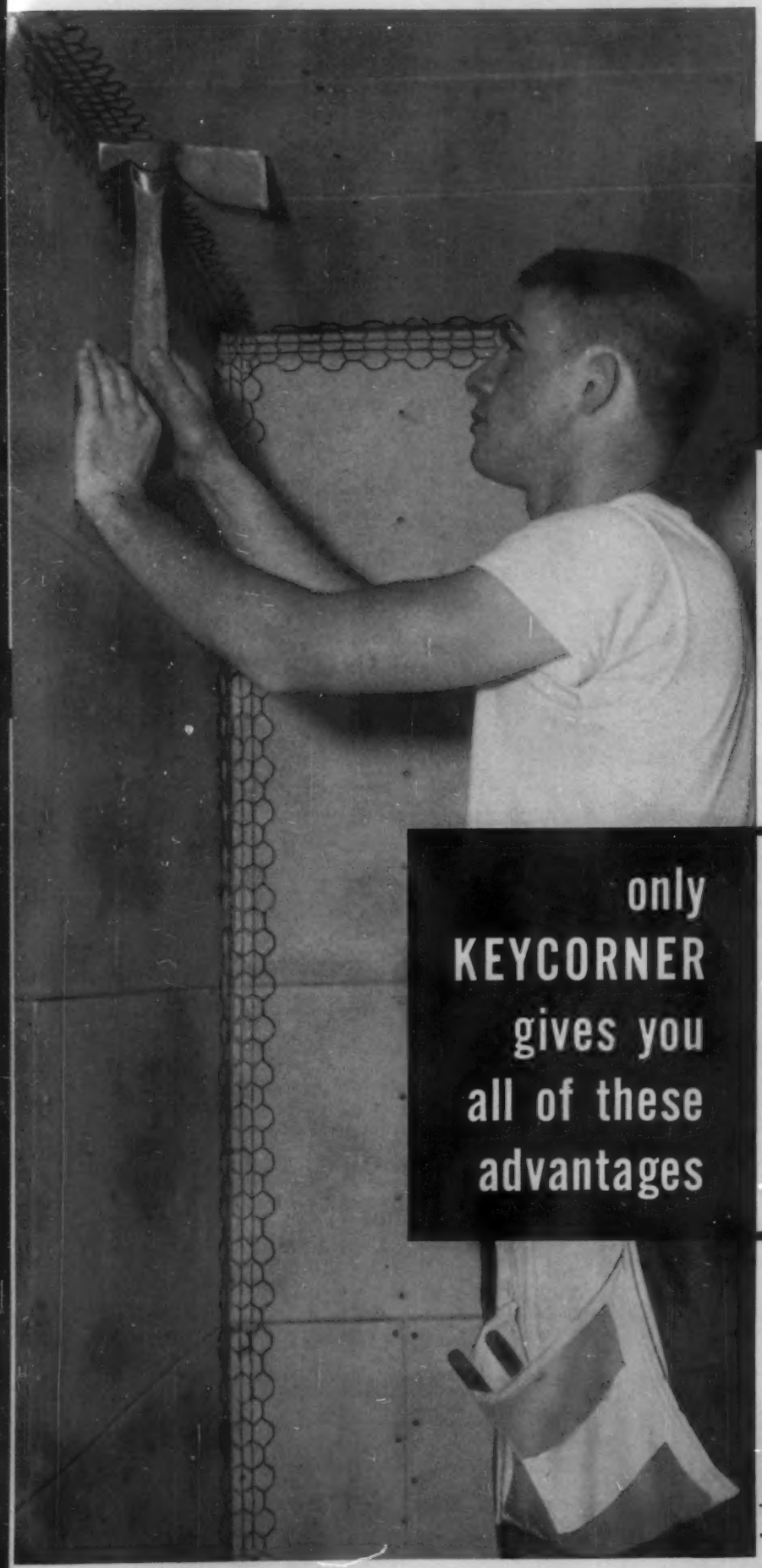
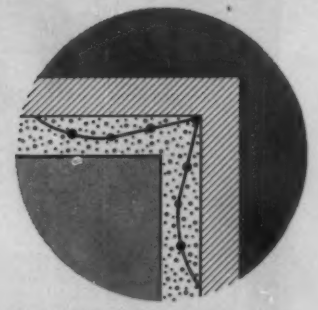


It's here!

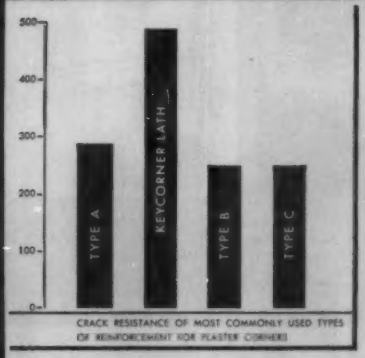
KEY

...at a new, attractive price

only KEYCORNER gives you all of these advantages



Self-furring—fully embedded— Flanges of Keycorner are shaped to assure full embedment with effective reinforcement. Snug grip of edges with lath makes it easy to plaster corners.



CRACK RESISTANCE OF MOST COMMONLY USED TYPES OF REINFORCEMENT FOR PLASTER CORNERS

the GREAT NEW

CORNER

GALVANIZED CORNER LATH

Exclusive new features of Keycorner give far greater crack resistance in plaster corners than any other type of reinforcement.

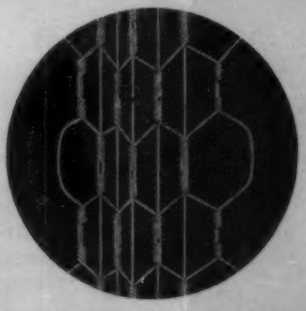
What's more, lathers and plasterers both like it. Lathers like the 4 ft. lengths. The precision fit. The smooth, pliable wire that doesn't cut or tear the hands. The ease with which they can do a craftsman-like job. They like the way it's bundled and packaged for convenient handling and storing.

Plasterers like Keycorner because it's so easy to plaster over; also because they can take pride in the workman-like corners that are strong, and crack resistant.

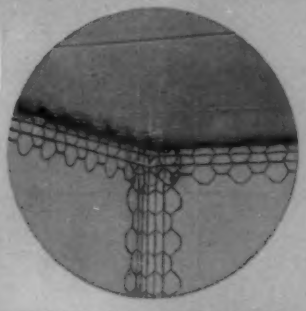
Builders like it because they get the highest quality job at a saving.

There are many attractive features about the NEW KEYCORNER. It costs you *nothing* to get the facts. Send for complete information about this new product. Write Keystone Steel & Wire Company, Peoria 7, Illinois.

It will pay to specify the new Keycorner for all your plastering jobs.



Designed to give maximum resistance to cracking—Spacing of longitudinal wires plus self-furring design adds exceptional crack resistance where needed most; keys plaster if open spaces occur behind Keycorner.



Precision formed—Every piece springs snugly into place. Fits accurately and exactly in corners, giving a truly craftsman-like appearance to the finished job.

plus all of these extra advantages

- Galvanized to prevent rust streaks
- Can be nailed or stapled
- Easy to plaster over
- Smooth wire does not cut or tear hands
- Little cutting required
- Packed in 4'-0" lengths
- Delivered in cartons (65½ lb.) of 1,000 ft.
- Easy-to-handle; easy-to-store

Comparison Test Reveals New KEYCORNER Almost Doubles Crack Resistance

A series of tests on crack resistance of plaster corners was recently completed by Edwin L. Saxer, Professor and Chairman, Civil Engineering Department, Research Foundation, University of Toledo. The chart at left records the results of KEYCORNER, plus those of the other commonly used types of reinforcement tested by Saxer. The results speak for themselves.

You can receive the complete test report by just filling in the coupon.

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KEYSTONE STEEL & WIRE COMPANY
Peoria 7, Illinois

☐ Please send me FREE test report by Research Foundation, University of Toledo.

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CORBUSIER ON RONCHAMP

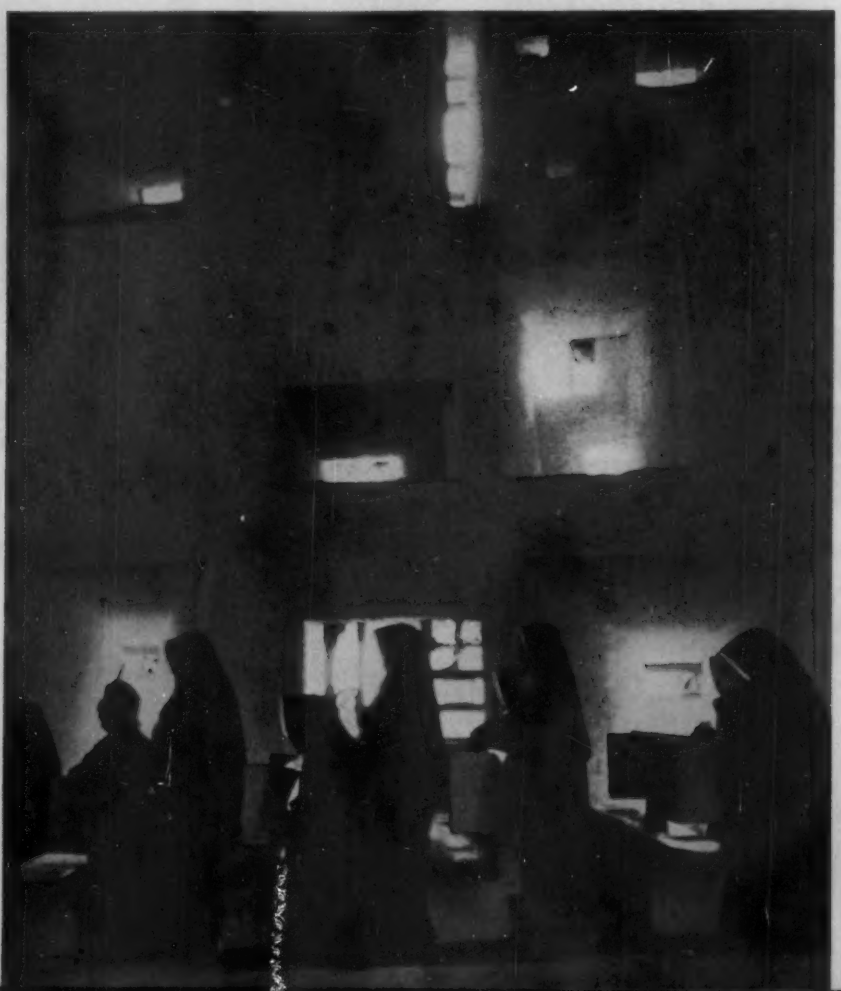
By G. E. Kidder Smith

The baroque architectural tradition of three-dimensional plastic space in which frame is indistinguishable from fill, in which every surface is esthetic partner to every other surface, and in which the interior is as much sculpture as architecture reaches its ultimate in Notre Dame du Haut at Ronchamp. Here on a lonely ridge of the Vosges, Le Corbusier, the Swiss-born Calvinist—whose birthplace, appropriately enough, is only 42 miles to the south—has given the world one of the most important churches in the history of Christendom.

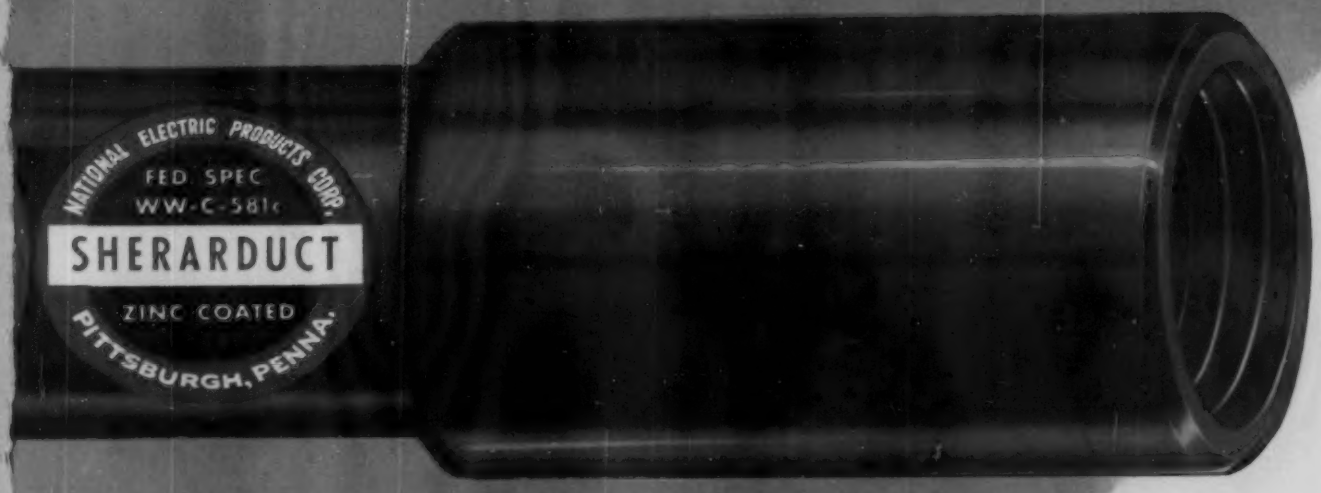
Ronchamp is, indeed, a new dimension in architecture. It creates an architectural space concept which has never been created before. It achieves in a small area—the interior measures only 43 by 82 feet—such a curiously disturbing, infinitely flowing spatial impression that it can be best compared to a Bach fugue which reveals itself only by degrees as understanding more knowingly probes it. And of all buildings in architecture, particularly those of the twentieth century, it demands a personal experience. Photographs, even in sequence, will not convey the intimate infinity of Ronchamp: one must walk slowly up that electric hill, push open that mystic

continued on page 72

The Chapel at Ronchamp. *By Le Corbusier. Frederick A. Praeger, Inc. (New York), in cooperation with F. W. Dodge Corp., 1957. 135 pp., illus. $5.50.*



HERE'S *double* PROTECTION



NOW galvanized Sherarduct is coated with NEW

FORMULA MVC-1

the modified polyvinyl chloride resin that provides the most effective barrier against corrosive agents of all kinds

National Electric has developed a new way to combat conduit corrosion. It is called Formula MVC-1, a new modified polyvinyl chloride resin coating that's available only from National Electric.

Here's what MVC-1 does to even further increase the protection against corrosion offered by the Sherardizing process of galvanizing.

RESISTANCE TO CORROSIVE ATTACKS—In accelerated salt spray, sulphuric acid and caustic tests conducted by the Pittsburgh Testing Laboratories, new Sherarduct with Formula MVC-1 far outlasted all hot dipped and other high-grade coated and galvanized conduits tested.

RESISTANCE TO FLAKING—Formula MVC-1 makes a tight, uniform, adhesive coating that withstands bending without cracking or flaking.

TEMPERATURE RESISTANCE—Formula MVC-1 is extremely resistant to high and low ambient temperatures and will withstand the majority of all industrial temperature conditions.

NOW ADD THIS NEW CORROSION RESISTANCE TO SHERARDUCT'S OTHER FEATURES

1. The Sherardizing process of galvanizing that alloys zinc with the conduit walls.
2. Normalized, highly ductile steel for easy bending and threading.
3. Zinc protected threads for complete end-to-end protection.

These are the features that convince architects, engineers and contractors it is best to specify National Electric Sherarduct when real corrosion protection is required. Write for complete information on new Sherarduct today.

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Sherarduct *with MVC-1* is Galvanized Conduit at Its Best

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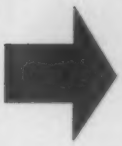
2 Plants • 12 Warehouses • 41 Sales Offices

INTERIOR PROTECTION—Formula MVC-1 makes new Sherarduct the first conduit with really lasting protection against interior corrosion. MVC-1 is a smooth, uniform coating that not only protects the conduit, but makes fishing easier by reducing friction between wires and conduit walls.



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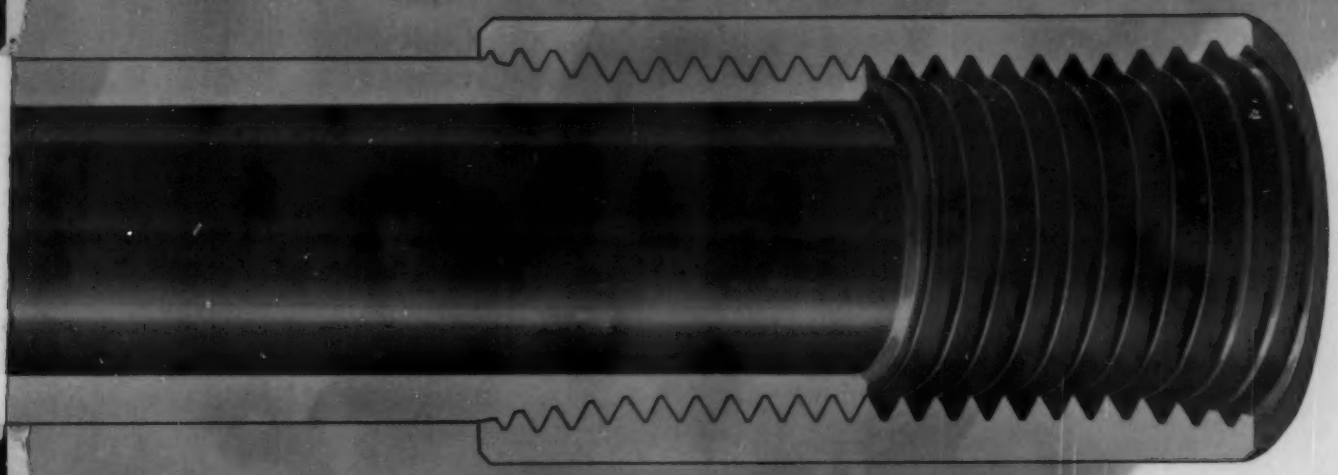

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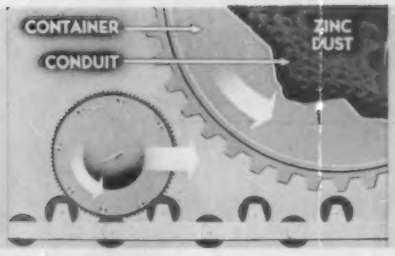
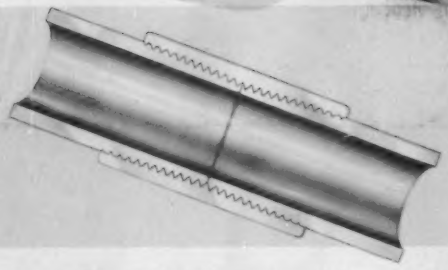
More facts about Sherarduct

RIGID STEEL CONDUIT





Sherardizing is Galvanizing at its Best

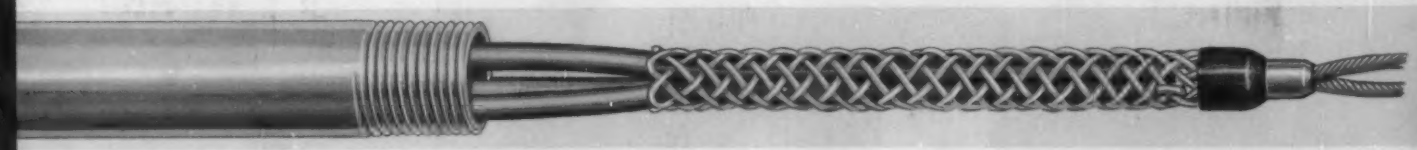
SHERARDIZING is an accurately controlled dry galvanizing process. Pure zinc dust and the raw conduit are heated in a retort to a temperature of 850° F. The zinc and steel combine to form a zinc-steel alloy in which there is actual penetration or protection in depth and not just a bonded surface coating of zinc. The result—SHERARDUCT conduit has superior corrosion resistant features in the base metal.

Sherarduct is Strongest at the Threads and Couplings

One of the big advantages in a SHERARDUCT system is at the threads and couplings. Not only are all threads precision-cut before galvanizing but the Sherardizing Process completely fortifies every hill and valley with zinc against rust and corrosion. Since each two connecting units of SHERARDUCT butt tightly within the coupling, a SHERARDUCT system provides lifetime protection of the electrical installation.

Sherarduct is Easy to Bend and Thread

Controlled heating, and cooling improves ductility. Upon completion of the Sherardizing time in the furnace, the retort is returned to a normal temperature level very slowly. It is this process of gradual heating and cooling that normalizes the metals—gives SHERARDUCT ideal ductility. SHERARDUCT conduit works into the job fast—bends without flaking, cracking or flattening—saves time and money.



Sherarduct is Easy to Fish

With new MVC-1 on the interior walls of SHERARDUCT (it's on the outside, too), the friction build-up between conduit and moving wires is held to a minimum.

In the completed SHERARDUCT conduit system, there are no openings in the joints, or burrs, to snag fishing cables or slow down pulling of conductors.

SHERARDUCT provides an open, smooth raceway through which wires can be pulled with ease and maximum speed.

Sherarduct *with MVC-1* is Galvanized Conduit at its Best

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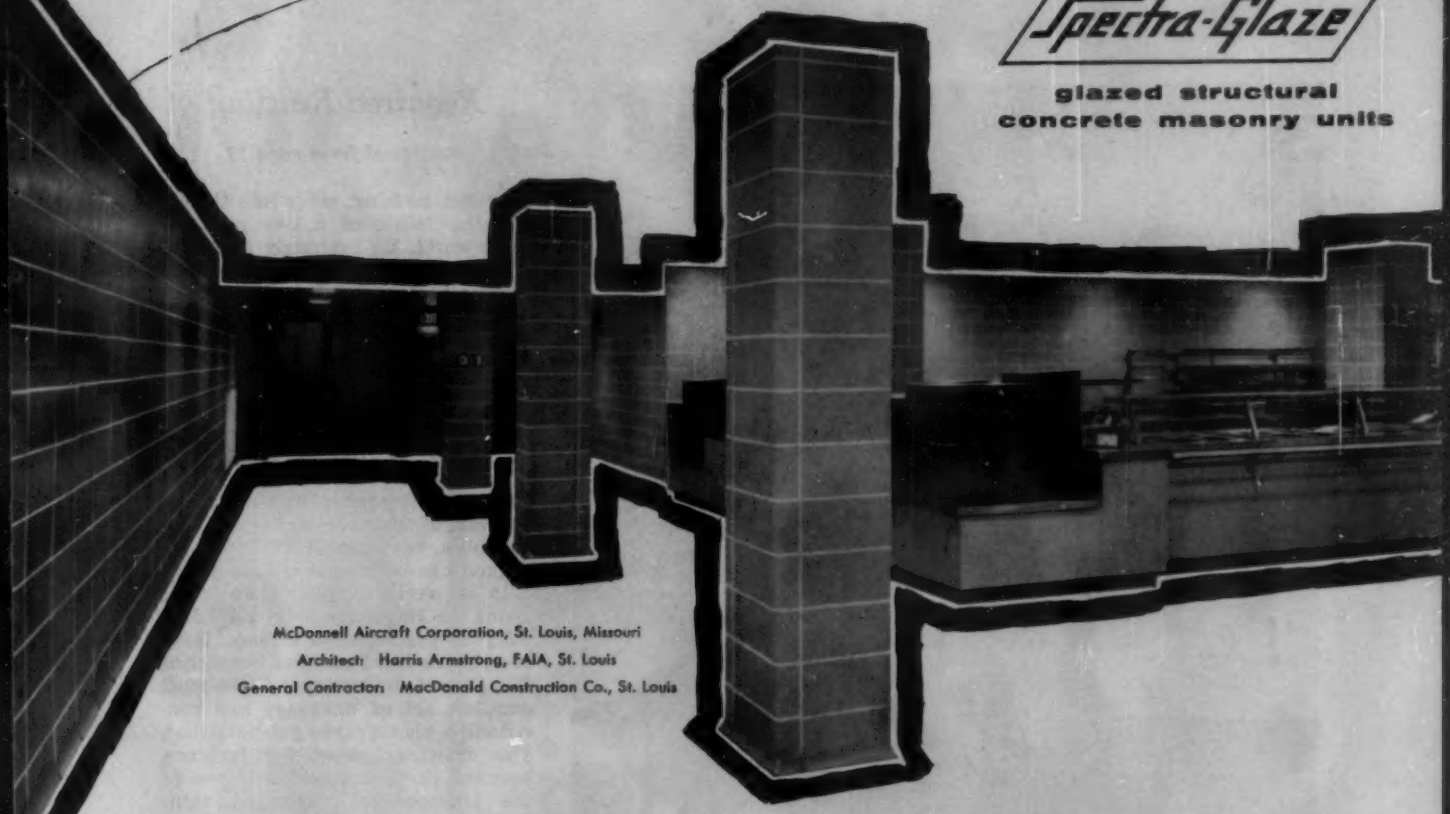

McDonnell Aircraft Corporation, St. Louis, Missouri
Architect: Harris Armstrong, FAIA, St. Louis
General Contractor: MacDonald Construction Co., St. Louis

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Combining a permanently sanitary finish for cafeteria walls with a colorful "appetizing" appearance, SPECTRA-GLAZE provided the answer to important construction requirements in this recent installation for the Engineering Divisions of McDonnell Aircraft Corporation, St. Louis, Missouri.

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SPECTRA-GLAZE is available in 18 standard colors, in exact dimensions, from a network of 21 licensed producers strategically located throughout the United States, Canada and England. For the name of your nearest producer, consult Sweet's Files.

* McDONNELL Aircraft Corporation designed, developed and now produces the F-101A VooDoo... holder of the official World's speed record.

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Bendix' new "Weatherman"*, for accurate and instant reporting of just how the weather is outside, is a natural eye catcher. It's adaptable to a variety of buildings such as airports, banks, schools, TV stations, and many others where this public service can be a "built-in" feature. It is also adaptable to existing structures. Weather conditions are indicated on large and colorful dials, showing outdoor temperature, relative humidity, rainfall, atmospheric pressure, wind speed, and wind direction.

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The "Weatherman" is made by Bendix Friez, makers of weather-data instruments for more than eighty years. For further information and installation data, write to Bendix Friez, 1320 Taylor Avenue, Baltimore 4, Maryland.

*REG. U.S. PAT. OFF.

Friez Instrument Division

Bendix AVIATION CORPORATION

Required Reading

continued from page 68

door and, pausing, enter into the enveloping fabric of a new architectural world. So cunningly contrived is this interior that it impels one to stroll continuously about. Ronchamp cannot be grasped from any one point of view; there are hidden delights around each of its many corners. The very windows themselves are set on the outside of deep reveals so that only those opposite one are fully visible. Two small "retreat" chapels (flanking the north entrance) are so inconspicuous that many visitors are unaware of their very existence. Furthermore, the exterior of Ronchamp is almost as exciting as the interior.

It is obvious, then, that Notre Dame du Haut can only with difficulty be presented in a book. However, in the third and final chapter of *The Chapel at Ronchamp* is the most complete set of drawings and construction photographs yet published. The drawings show, for instance, how the curve and counter-curve of the "independent" salvaged stone walls arose from the necessity for self-bracing. The construction photographs clearly reveal how the now hidden concrete frame carries the roof burden in the seemingly monolithic walls. All of this is both illuminating and valuable.

The first two chapters are directed, almost in souvenir fashion, to the non-professional visitor; the third, largely to the architect. If the professional will first study this chapter and then go back to the beginning, he will find the purchase price well spent.

The Organ in Church Design

By Joseph E. Blanton. Venture Press (Albany, Texas), 1957. 492 pp., illus. $20.00 (available from publisher only).

The purpose of the author is to "acquaint the average architect with the organ as an instrument and to introduce to him the wealth of possibilities in its architectural treatment." This objective is admirably fulfilled, and the book will reward organists, organ designers, and art and music students as well as organists.

Mr. Blanton discusses the nature of the organ, its design, and its history. The detailed treatment of such problems as worship requirements, location, acoustics, and esthetics, will equip the architect to deal with any

continued on page 394

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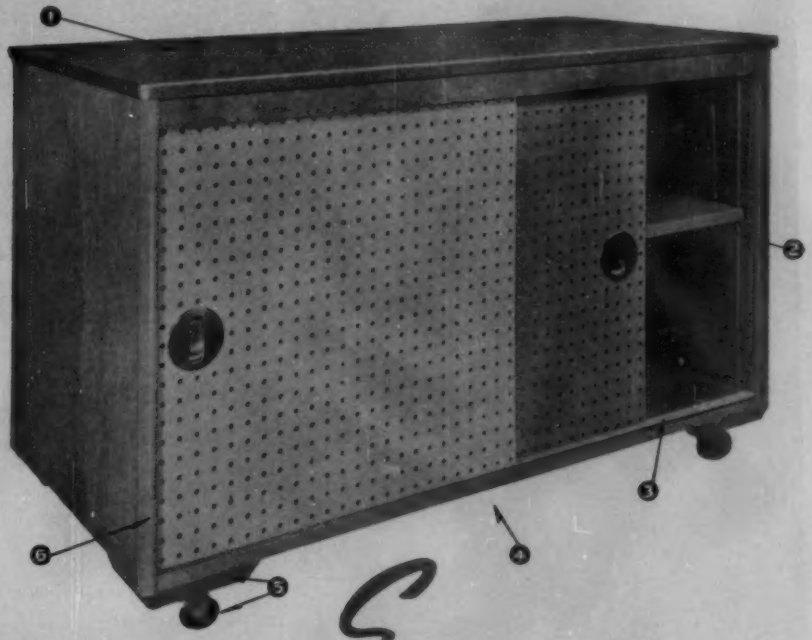

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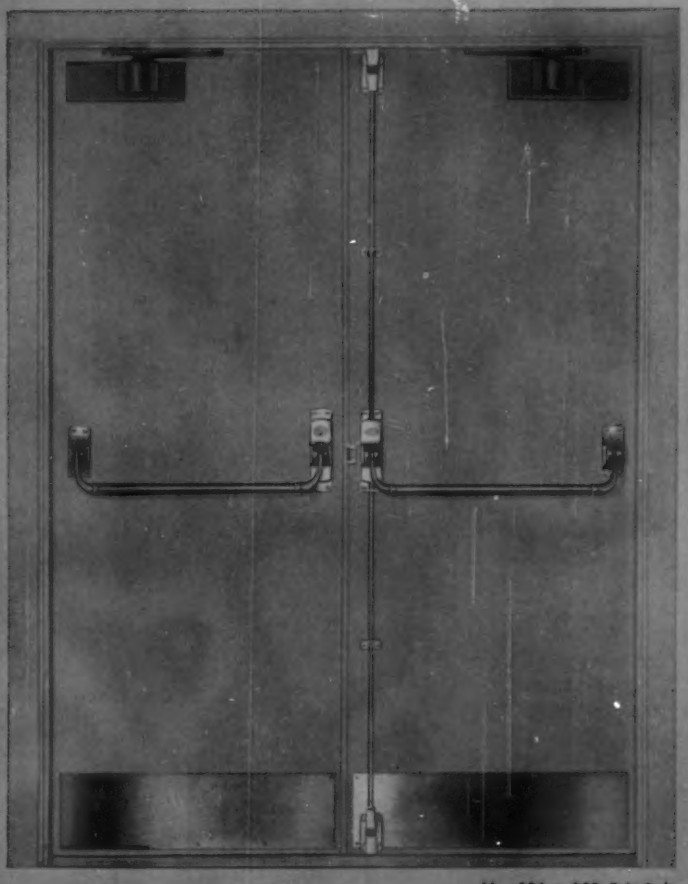

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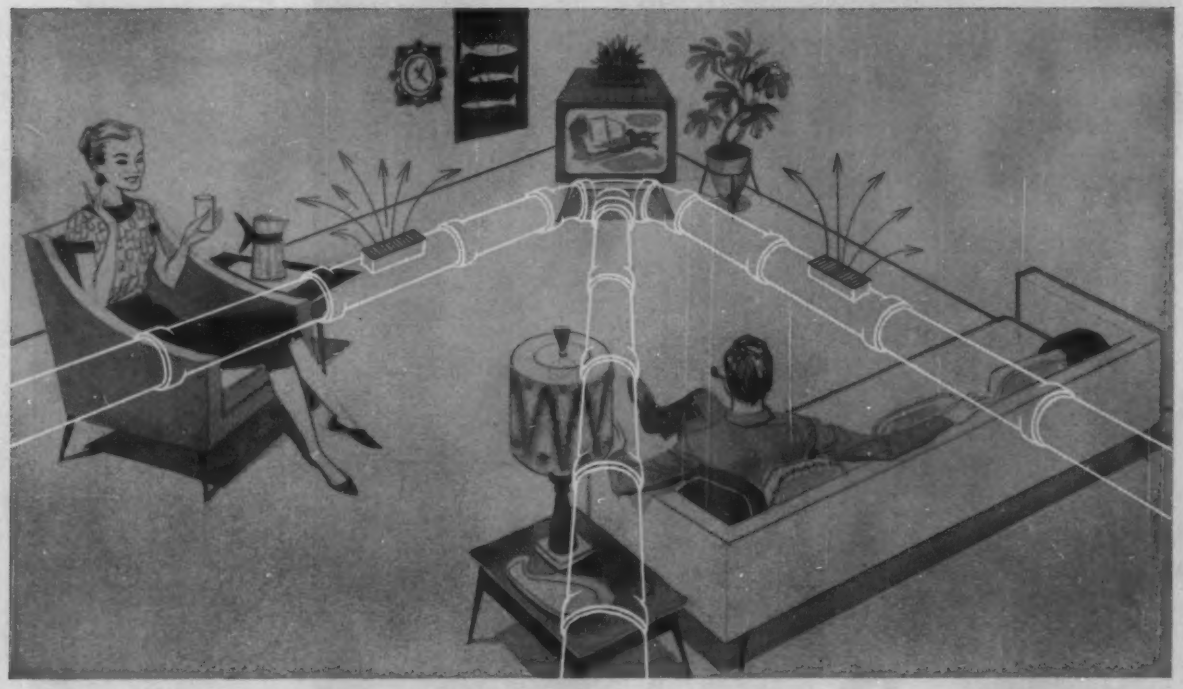
nothing performs like Clay Pipe for Air Conditioning Systems



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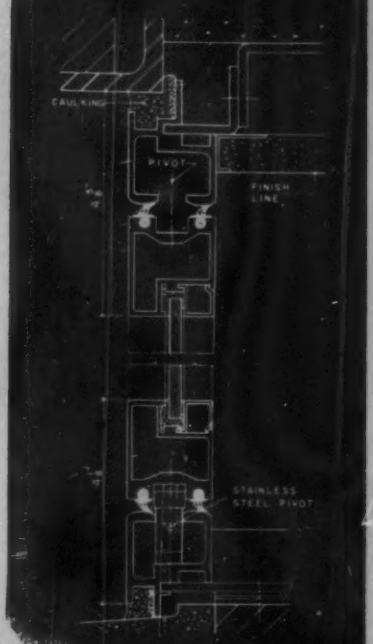

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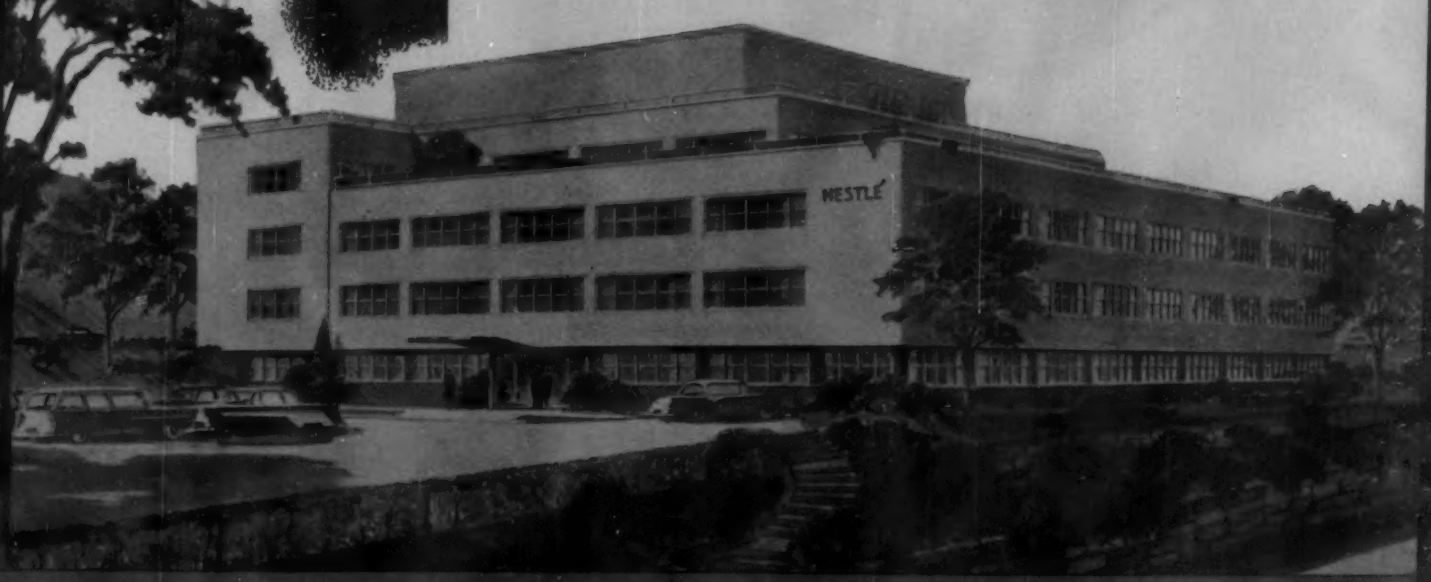

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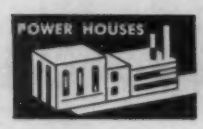

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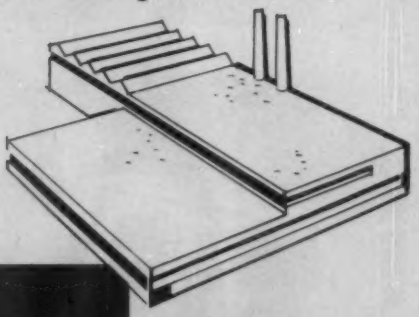
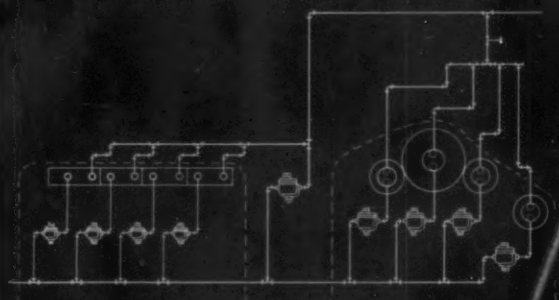


TYPICAL APPLICATIONS



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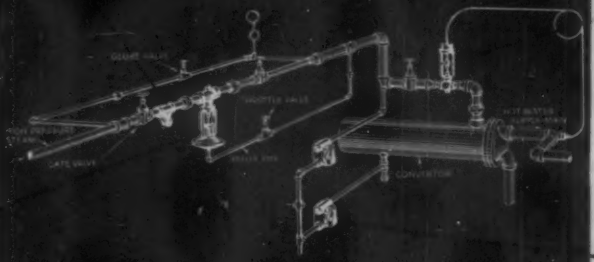
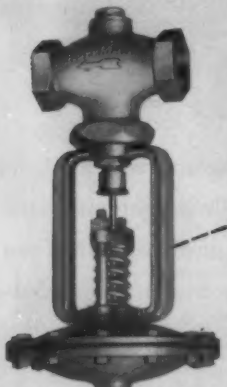


Converter for Heating Water with High Pressure Steam



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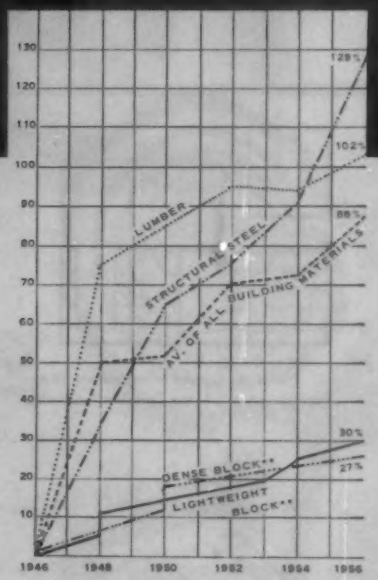
And Vibrapac Block is a low cost building material. Data compiled by the U. S. Dept. of Commerce (see table at right) emphasizes the economy of concrete block masonry. In addition, the ease and speed with which Vibrapac Block can be laid, provide marked savings in time, labor and materials.

Yes, Vibrapac Block gives you beauty and permanence at an amazingly low cost. Why not learn more about this modern building material? Your nearby Vibrapac Block plant will gladly give you all the facts.



Price trends of various building materials as compiled by U. S. Department of Commerce.

Note the charm and beauty of this exposed Vibrapac Block church.

Large hospital building with exterior walls of exposed Vibrapac Block.

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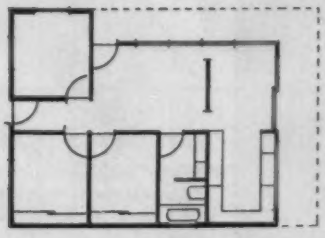
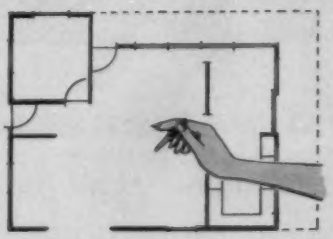
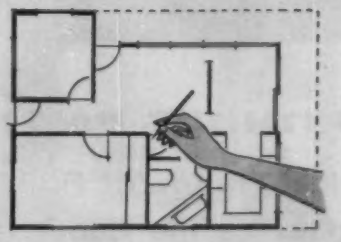
See for yourself how quick and easy you can make design changes with Ozalid intermediates. Contact your local Ozalid man—his name is in the phone book—or write for free folder. Write to Ozalid, Dept. B-4, Johnson City, N. Y. In Canada: Hughes Owens Co., Ltd., Montreal.



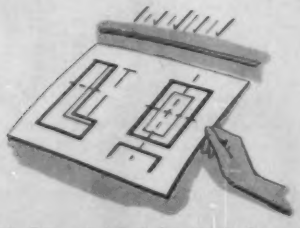
1. This is an Ozalid intermediate (translucent) print of the original drawing.



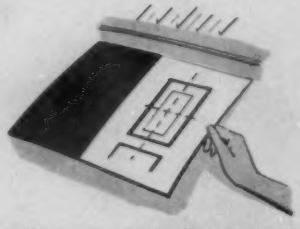
2. Draftsman eradicates obsolete lines with Ozalid Corrector Fluid.



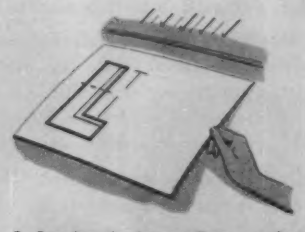
3. New design is drawn in. Prints can now be run from this intermediate "master."



1. Expose original drawing in the usual manner on Ozalid intermediate paper, cloth, or foil. But do not develop!



2. Cover all printed yellow lines which are to be retained on the intermediate with a mask of black opaque paper—re-expose in Ozalid machine. The light will remove all obsolete details left uncovered.



3. Develop the intermediate . . . and you have a clear, up-to-date "framework" to which you add the new design. Use this intermediate master to produce prints.

OZALID®

Products for Design

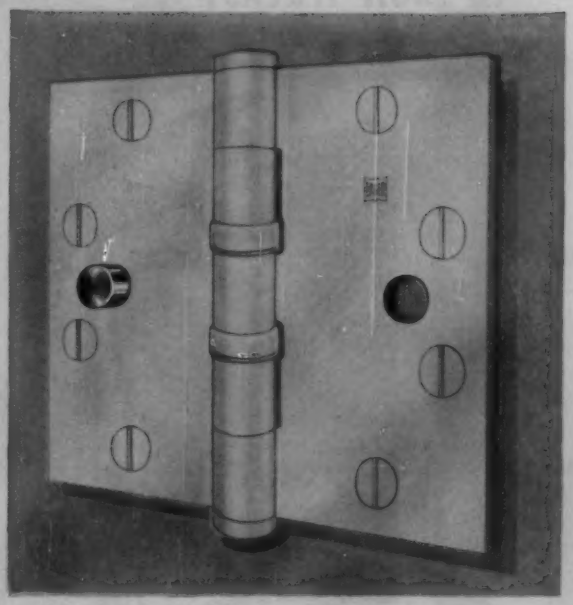
A Division of General Aniline & Film Corporation
In Canada: Hughes Owens Company, Ltd., Montreal

ANNOUNCING HAGER'S NEW

Syncretized SAFETY STUD

for maximum security

even if the pin is pulled...
you can't pull
the leaves apart!



IT'S
TAMPER-PROOF

Available on all Ball Bearing and template Plain Bearing Butt Hinges, at additional charge. Specify Symbol SH.

No question about the simple unfailing function of HAGER'S new SYNCRETIZED safety stud. Come night-fall when doors swing shut, an inconspicuous yet rugged metal stud on one hinge leaf penetrates the thickness of the other. All's secure. Pull the pin...knock off the knuckles...the leaves remain "locked" at a point beyond a prowler's reach. Here is maximum security in a handsome, Hager hinge!

For pilfer-proof protection specify Hager's new *Syncretized* Safety Stud feature on that next *security* job!

EVERYTHING...security, flawless performance, beauty...Hinges on Hager!

1. Position of syncretizing metal stud when door is open. It is unnoticed.

2. Door closed. Leaves are interlocked by metal stud, preventing movement of door in *any* direction with respect to jamb.

FOR MEDIUM SECURITY... specify set screw in barrel reducing easy pin removal.

Specify symbol N.R.P.

© 1957 C. HAGER & SONS HINGE MANUFACTURING COMPANY • ST. LOUIS 4, MISSOURI

here's a partition that

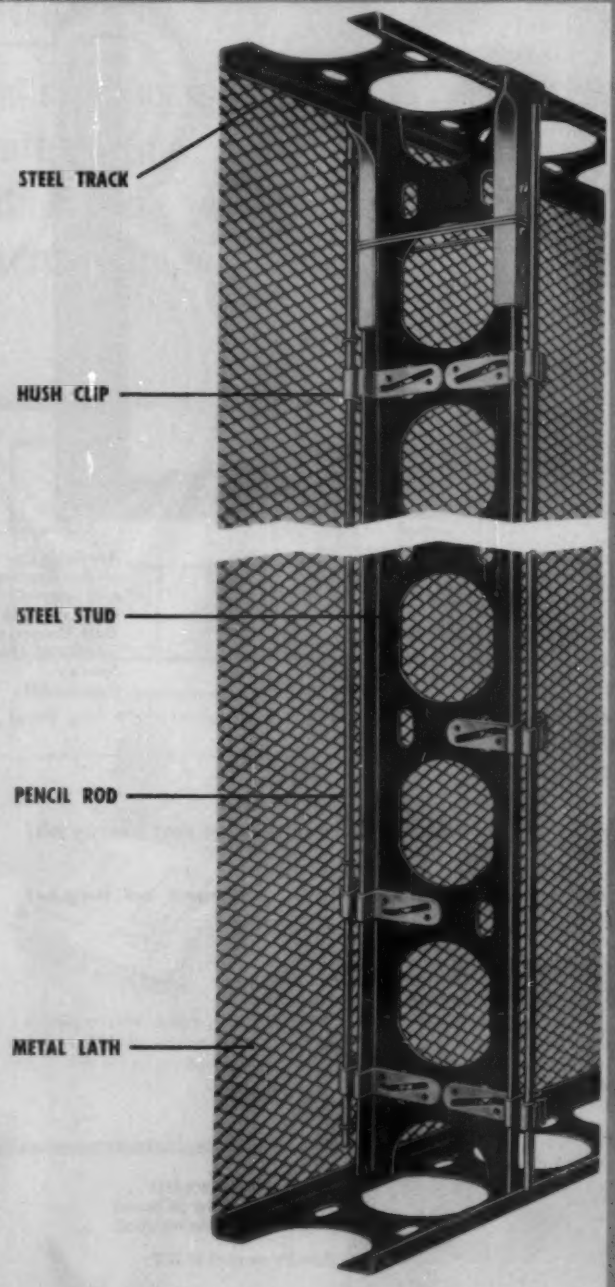
STOPS SOUND AND FIRE

in their tracks!

FIRE-RESISTIVE RATING: 3½ hours. Test conducted with a partition of 4" studs and 1" perlite plaster on each face. An identical partition also met all ASTM Fire and Hose Stream Requirements for a 3½-hour partition.

SOUND-TRANSMISSION LOSS RATING: 56.4 decibels. This partition had 3¼" studs and ¾" sanded gypsum plaster on each face.

Complete data for either test furnished on request.



The above fire and sound ratings are the highest ever obtained by a metal lath and plaster partition. They were recorded by Penmetal's HUSH-CLIP* system, in tests conducted by a recognized Midwestern research laboratory.

For a better fire rating, you'd have to go to costly, heavy, solid masonry or reinforced-concrete construction. A comparable sound rating cannot be obtained with a conventional double partition, even when the assembly is 10" thick, and mounted on 1" cork strips. The HUSH-CLIP system does not require cork strips, and can be as thin as 5½".

Utilizing steel studs and track, and plaster over metal lath, the system features a unique clip used in combination with a pencil rod. Because direct wall-to-stud contact is limited to point of clip, the area over which sound is transmitted is greatly reduced. Since components are designed to fit together, assembly is easy and economical.

Another advantage of this system is resistance to plaster cracking. The wall proper is held away from the studs by the resilient clips which allow the panel to "float." Movement due to expansion and contraction is thus absorbed and possibility of cracking is greatly reduced.

Send for full details of this unique partition. Ask for a copy of folder 615-L.

PENN METAL COMPANY, INC.

General Sales Office: 40 Central St., Boston 9, Mass.
Plant: Parkersburg, W. Va.
District Sales Offices: Boston, New York, Philadelphia, Pittsburgh, Chicago, Detroit, St. Louis, Dallas, Little Rock, Seattle, San Francisco, Los Angeles, Parkersburg

Penmetal 1869

a name to remember

*Patent pending

PM-173

BLACK

or the

illusion

of black?

Imported CASTELL is saturated with "black gold" — the best natural graphite of more than 99% pure carbon

Black as midnight . . . but more important, imported CASTELL *stays* black on your drawing without flaking or feathering, *stays* black when it faces the relentless light of the blueprint machine. The *blacker* the line the *sharper* the print.

With maximum graphite content and optimum granulations, there is no need to add foreign oily substances to give CASTELL the *illusion* of black. CASTELL is *born* black. Our exclusive microlet-milling reduces the particles to perfect size and consistency, gives you clean, sharp, extremely opaque lines that make hundreds of prints without losing their reproductive qualities.

20 scientifically-uniform degrees, 8B to 10H, close-textured lead that can take and *keep* a needle-sharp point, remarkable erasability that leaves no ghosts, color-coding in the harder drafting degrees for instant identification — these are some of the reasons why CASTELL is hailed as the Drawing Pencil of the Masters. You owe it to your career to use CASTELL. All good dealers carry it . . . why not call yours today?

CASTELL LOCKTITE (with Tel-A-Grade Indicator) for those who prefer a feather-weight holder with degree indicating device. Grips the lead like the jaws of a bulldog to prevent slipping or turning. One hand push-button control reduces graphite stains.

Imported CASTELL 9030 Lead — with the identical graphite that made Castell wood pencil world famous. Usable in all standard holders, but a perfect mate with LOCKTITE. Also available in a kaleidoscope of colors. Packed in plastic tube, 12 leads each.

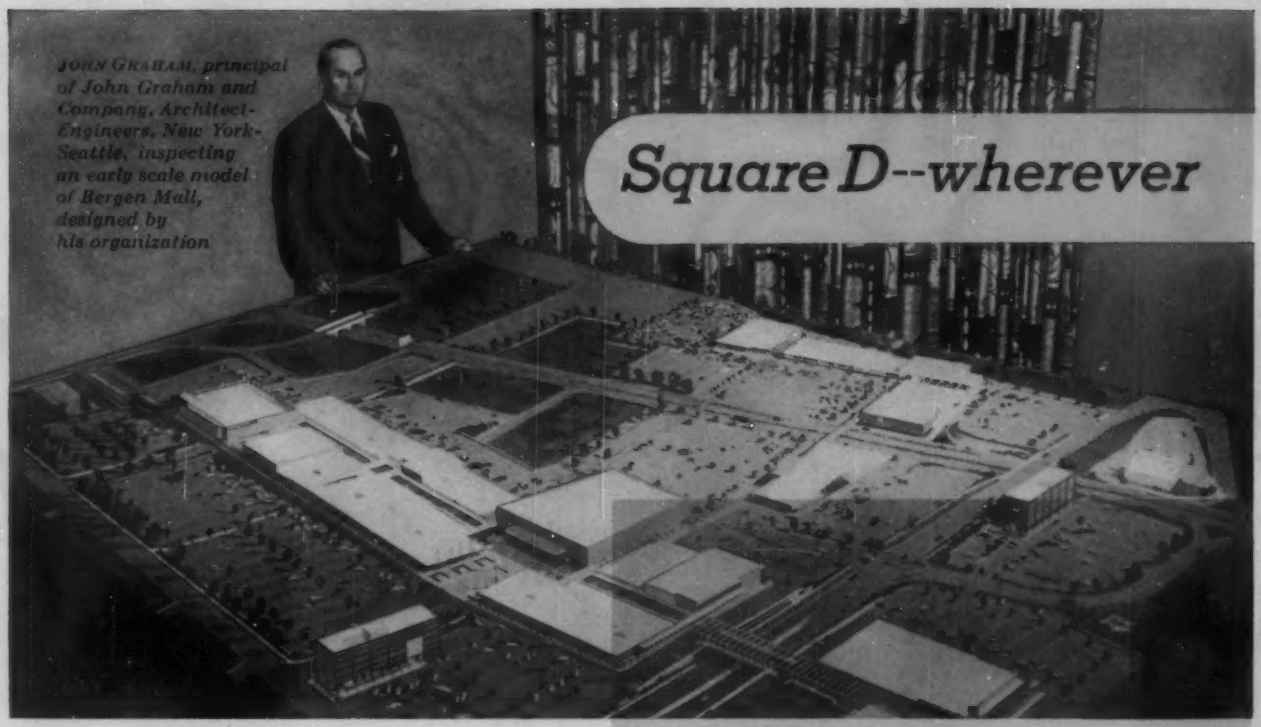
A.W.FABER • CASTELL

NEWARK 3, N. J.

The Proudest Name in Pencils

Castell in Canada • Write Hughes Owens Co., Ltd., Montreal

PREFERRED BY PROFESSIONALS IN EVERY CIVILIZED COUNTRY ON EARTH.


JOHN GRAHAM, principal of John Graham and Company, Architect-Engineers, New York-Seattle, inspecting an early scale model of Bergen Mall, designed by his organization
Square D--wherever

There's Nothing Small About Bergen Mall!

106 acres! 1,000,000 square feet of retail selling space already built! 1,500,000 square feet of retail selling space with 100 stores, when completed! 8,500 parking spaces! Such is the Bergen Mall regional shopping center in Paramus, New Jersey, built by Allied Stores Corporation. Certainly Allied, who built the world's first regional center in Seattle, Washington, has done itself proud in this tremendous project, rightly called "New Jersey's finest."

Square D electrical control and distribution equipment is "on duty" throughout this big and architecturally beautiful shopping center.

FIELD ENGINEERING SERVICE is available through more than one hundred Square D offices, backed by an international network of over 1000 authorized electrical distributors and 17 plants in the United States, Canada, Mexico and Great Britain.

Executive Offices • 6060 Rivard Street, Detroit 11, Michigan

(*Above*) Only one main street ...a proven way to generate heavy shopping traffic. The central Mall, 920 feet long, is designed to create a park-like atmosphere.

(*At right*) The new Stern's department store is a thing of functional beauty. 320,000 square feet on four levels—a total of more than seven acres of space. Exterior combines use of marble, red brick, rough-cut stone and large glass areas.

EC&M HEAVY INDUSTRY ELECTRICAL EQUIPMENT...NOW A PART OF THE SQUARE D LINE

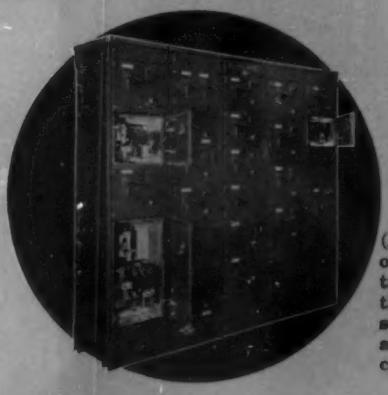
SQUARE D COMPANY

electricity is distributed and controlled

Here's An Outstanding Example of Square D Equipment and Field Engineering Service *In Action!*

There are hundreds of **Square D Lighting and Power Panelboards** throughout Bergen Mall. These are in kitchen area, and control lighting for the Stern dining room and power for kitchen equipment.

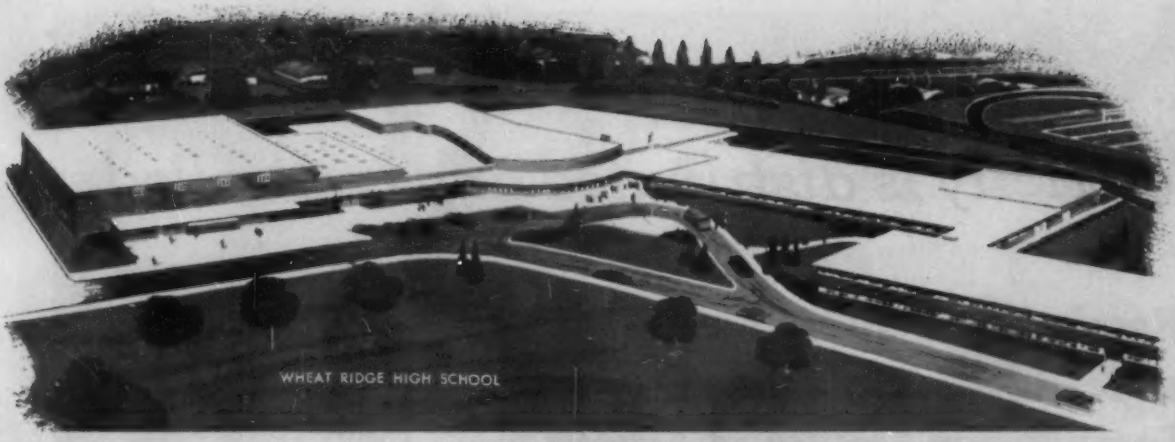
(*At right*) **Square D Feed-In Duct** runs the full length of this half-mile truck concourse, distributing power to the stores on both sides.



(*At left*) A **Square D Control Center** of this type provides complete control for the air-conditioning system in the Stern store. In addition, there are seven **Square D Switchboard** installations with a total combined ampere capacity of 22,500 amperes.

A *Complete* LINE OF ELECTRICAL DISTRIBUTION AND CONTROL EQUIPMENT

ADJUSTABLE SPEED DRIVES
BUSWAYS & WIREWAYS
CIRCUIT BREAKERS
CONTROL CENTERS
CRANE & HOIST CONTROL
DISTRIBUTION SWITCHBOARDS
ELECTRIC TRUCK CONTROL
HIGH VOLTAGE CONTROL
LAUNDRY CONTROL
LIFTING MAGNETS
LIGHTING AND POWER PANELBOARDS
LIGHTING CONTROL—LOW VOLTAGE
LIMIT AND FOOT SWITCHES
MACHINE TOOL CONTROL
MAGNETIC BRAKES
METER MOUNTINGS
MOTOR STARTERS
PRESS CONTROL
PRESSURE, FLOAT, & VACUUM SWITCHES
PUSHBUTTONS
RELAYS AND CONTACTORS
RESISTORS
SAFETY SWITCHES
SERVICE ENTRANCE EQUIPMENT
STAGE DIMMERBOARDS
STEEL MILL CONTROL
SWITCHGEAR & UNIT SUBSTATIONS
SYNCHRONOUS MOTOR CONTROL
TERMINAL BLOCKS
TEXTILE MACHINE CONTROL
TIMERS
VOLTAGE TESTERS
WELDER CONTROL



TWO MORE PRESTRESSED CONCRETE STRUCTURES

For Both Schools • *Architects*—R. D. Peterson & A. T. Auburn • *Engineers*—Sallada & Hanson • *Contractors*—Craftsmen Construction Co., Inc. • All of Denver, Colo.

Architects R. D. Peterson and A. T. Auburn tell you in their own words why they chose prestressed concrete for two schools

"In designing the new Lakewood and Wheat Ridge High Schools, in Jefferson County, Colorado, each with approximately 125,000 square feet of floor area, we were faced with a limited budget for the size and facilities required. After careful analysis with our structural engineers, we selected prestressed concrete as the structural system.

"The use of prestressed concrete has resulted in a fire-resistant building at a much lower cost than comparable buildings of the same size and facilities in this area. The completed buildings, including all the built-in equipment under the general construction contract, the cost of land, furniture, site improvements, fees... are within a $2,000,000 budget for each school.

"The successful bidder, with a combined bid for the two projects, decided to set up their own casting bed on the Wheat Ridge site for the double-tee slabs for both projects. The double-tee slabs are being used for all roofs and floors above grade, and are left exposed with a sprayed-on acoustical plastic finish, except where suspended ceilings are provided to conceal piping in rooms above. This results in an attractive appearance at much less expense than suspended ceilings. The auditorium and gymnasium prestressed beams were post-tensioned. This allowed a reduction in over-all height with a consequent savings in cubage and construction cost. The use of pretensioned, prestressed slabs permitted us to design a 40'-0" wide clear span library room with a minimum structural depth. This method was also applied in other areas requiring clear spans with no columns."

Here, again, is a collection of qualities that clearly points out the advantages of prestressed concrete as a construction method.

It is but one example in a growing list of applications all over the country. Roebling's role in the prestressed field goes back to the introduction of the method in this country. We invite inquiries of any nature on the subject of prestressed concrete. We have at hand literature, experience and the *desire* to bring the many benefits of prestressed concrete to your attention. An inquiry to Construction Materials Division, John A. Roebling's Sons Corporation, Trenton 2, New Jersey, will bring a prompt reply.

ROEBLING

Branch Offices in Principal Cities
Subsidiary of The Colorado Fuel and Iron Corporation

CONSULT ROEBLING...FIRST IN U. S. WITH
PRESTRESSING AND TENSIONING ELEMENTS

Buensod pioneered and introduced proper controls for Dual-Duct Air Conditioning. Inherently, such systems have unstable pressures—yet provide the greatest flexibility of control for the occupants. So the problem was to make . . .

a STABLE dual-duct system

Buensod does it automatically and without a sensing instrument or complicated electronic device. This is DIRECT, AUTOMATIC VOLUME CONTROL. No matter what the variance in static pressures, a constant quantity of air is maintained in each unit. This makes it *impossible to unbalance any zone in the system.*

And it's so simple. A screw setting of spring tension at the time of installation and the unit need never be touched again. If after installation, a change of air volume in a particular zone is desired, it can be made quickly by adjusting one nut. When desired, volume adjustment can be pre-set at the factory by calibrated flow meters, eliminating the need for field adjustment. This, in effect, balances the entire system without necessity of a field check and re-balancing.

Compressed air from a local thermostat controls the mixing valve. No linkage. No pivot points. The valve has been designed for direct, straight-line movement.

Whether you're working on a new building or a renovation, Buensod Dual-Duct air mixing units will do the job and do it best, and one of the reasons is

DIRECT, AUTOMATIC VOLUME CONTROL

BUENSOD-STACEY

BUENSOD-STACEY, Inc.

St. Charles...

Now in 126 Detroit area schools

Storage and Instruction Units—
custom-built to special classroom needs

Special Elementary Classroom Units
(24" high counters shown here)

Custom-Built Clothing Classrooms

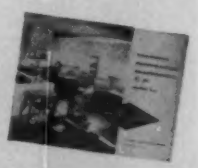
Custom-Built Steel Kitchens • All photos are of classrooms planned and installed by St. Charles School Specialist, C. B. Wright, following close consultation with Detroit area architects, school administrators and home economists.

Steel Kitchens and Casework... custom-built for all levels of teaching!

In the last seven years . . . in the Detroit area alone . . . 126 schools have ordered new homemaking classrooms designed, planned and built with St. Charles *custom steel units!* The reason is simple: only St. Charles *custom* construction offers such flexibility to meet individual classroom needs—*at all levels of teaching.*

When you specify St. Charles, you can depend on careful individual planning by a skilled St. Charles specialist—and quality construction throughout! Quality—and custom construction . . . two reasons St. Charles was selected for 126 Detroit area schools, and for hundreds of other schools throughout the country.

For your free copy *of PLANNING HOMEMAKING CLASSROOMS, write on your letterhead to St. Charles, Dept. ARS-2*



StC

casework • sinks and counters • special purpose units

ST. CHARLES MANUFACTURING COMPANY, ST. CHARLES, ILLINOIS

New York International Airport's new International Arrival Building, partially shown here, is air-conditioned by nine absorption machines located in a central heating and refrigeration plant and...

Building's system was designed to a static pressure of 8" water. SOFTITE Cop-R-Loy *used ranged from 16-gage for ducts over 18" in diameter to 22-gage for 8" or less.*

Because sections were made up in Alpine's shop with short lead time on an "as needed" basis, Wheeling's dependable delivery was a big advantage.

5 miles of high-velocity trunk lines made of Wheeling SOFTITE® COP-R-LOY® Sheets

Although it's only three stories tall, Idlewild Airport's new 3,200'-long International Arrival Building has the high-velocity air-distribution system normally associated with skyscrapers. It was selected to minimize the space requirements of trunk lines and ducts in the extremely long structure... and to assure the best possible year-round air-conditioning in every part of it.

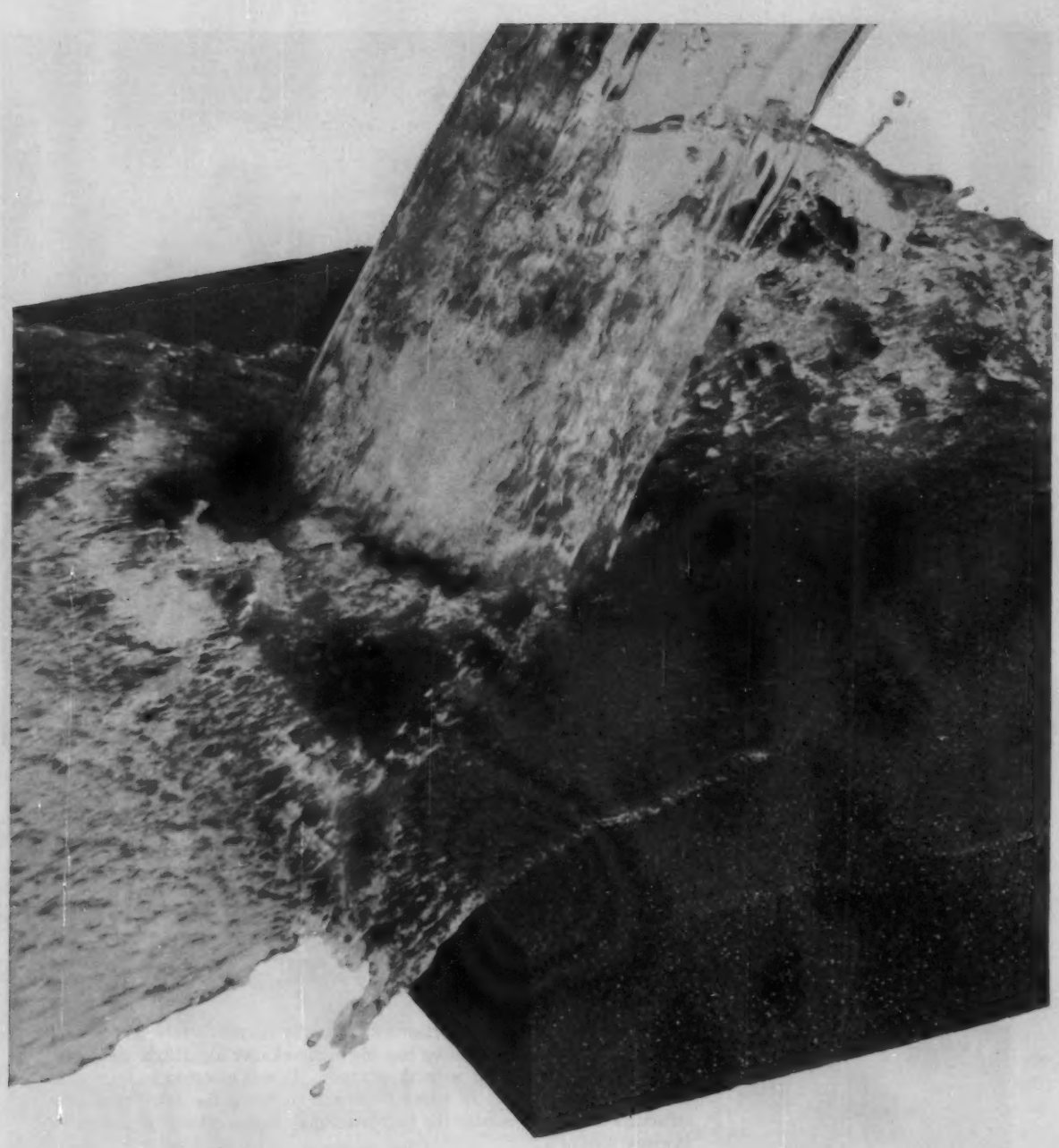
Using almost 250 tons of Wheeling SOFTITE Cop-R-Loy Galvanized Sheets, the lines were fabricated by Alpine Sheet Metal & Ventilating Company, Long Island City. The company's president, Mr. Marty Langberg, saya, "We knew this was going to be a tough job, so we worked extremely carefully and used SOFTITE Cop-R-Loy wherever possible to assure extra-long, trouble-free service from the system."

For full details on SOFTITE Cop-R-Loy's extra-long life, contact your nearby Wheeling warehouse or sales office. Wheeling Corrugating Company, Wheeling, West Virginia.

ARCHITECT	Skidmore, Owings & Merrill
OWNER	Port of New York Authority
GEN. CONTRACTOR	Cauldwell-Wingate Co.
FABRICATOR	Alpine Sheet Metal & Ventilating Co.

WHEELING CORRUGATING COMPANY—IT'S WHEELING STEEL

IMMEDIATE DELIVERY ON ALL STOCKED ITEMS FROM THESE WAREHOUSES: *Boston, Buffalo, Chicago, Columbus, Detroit, Kansas City, Louisville, Minneapolis, New Orleans, New York, Philadelphia, Richmond, St. Louis* **SALES OFFICES:** *Atlanta, Houston*



. . . always an insulation investment; never an insulating expense

FOAMGLAS® IS MOISTURE-PROOF

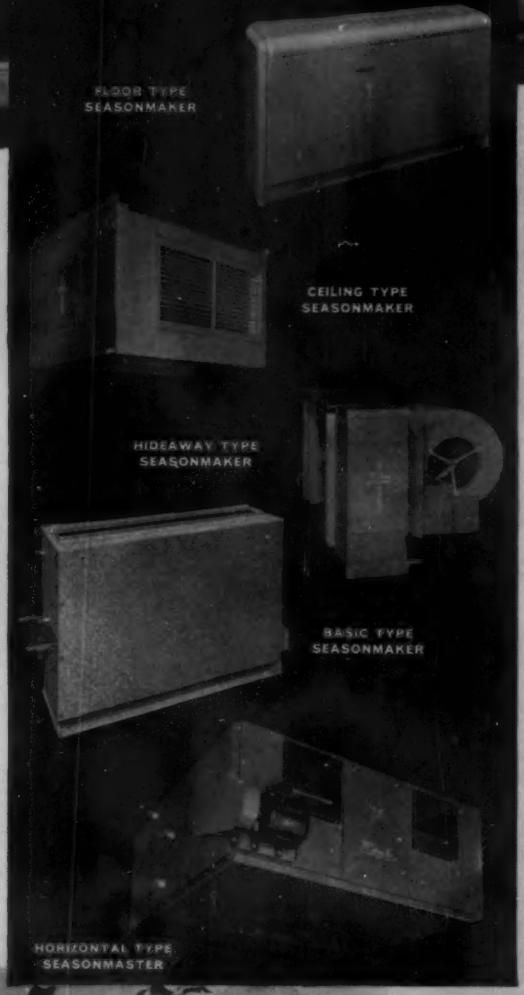
Insulation that absorbs moisture soon stops insulating. That happens to most insulations, in time. It never happens to FOAMGLAS . . . because FOAMGLAS is moisture-proof. Its sealed glass cells can never absorb water or vapor. It always maintains its full, original insulating value. There's more to this insulation investment story. FOAMGLAS is incombustible . . . dimensionally stable . . . unusually strong . . . acid-proof . . . vermin-proof . . . easy, economical to handle and install. Find out how to make this long-term investment in your own insulated buildings and equipment. Write for our latest catalog.

PITTSBURGH CORNING CORPORATION

Dept. B-48, One Gateway Center, Pittsburgh 22, Pa. • In Canada: 57 Bloor Street West, Toronto, Ontario

HERE ARE 131 MORE REASONS WHY "the Sands" IS FAMOUS

The Sands Hotel, Tucson, Arizona
Architects: Heusner & Mecsal, Chicago, Ill.
General Contractor: Murray J. Shift Construction Co., Tucson, Arizona
Mechanical Contractor: Aire Engineering Co., Tucson, Arizona.



McQuay

SEASONMAKER • SEASONMASTER

Air Conditioning Units

To those who winter in Arizona as well as those who spend all of their time in this picturesque vacationland, the Sands Hotel is famous. And here are 131 more reasons why. The Sands is completely air conditioned by 129 McQuay Seasonmaker individual room units and two McQuay Seasonmaster Central Type units for the larger areas, which provide both heating or cooling as the weather demands. For the greatest flexibility, for the greatest possible efficiency and economy, investigate McQuay. Call in your McQuay representative and have him show you why you can always depend upon McQuay proven products. McQuay, Inc., 1605 Broadway St. N. E., Minneapolis 13, Minnesota.

[redacted] leans Quality

FLOOR TYPE SEASONMAKER—for free standing floor mounting. Four sizes, 200 cfm to 600 cfm, ½ to 2 ton nominal cooling capacity. Both thermally and acoustically insulated. Choice of three air discharge grilles.

CEILING TYPE SEASONMAKER—for suspended mounting. Seven sizes, 200 cfm to 2000 cfm, ½ to 5 ton nominal cooling capacity. Both thermally and acoustically insulated.

HIDEAWAY TYPE SEASONMAKER—for concealed, suspended mounting in closets, attics or furred spaces. 7 sizes, 200 cfm to 2000 cfm, ½ to 5 ton nominal cooling capacity. Insulated drain pan.

BASIC TYPE SEASONMAKER—for fully recessed built-in wall installations. Four sizes, 200 cfm to 600 cfm, ½ to 2 ton nominal cooling capacity. Thermally and acoustically insulated.

HORIZONTAL SEASONMASTER—for central station air conditioning, available with cooling coil, heating coil, bypass, mixing box and filter section. Removable panels permit inspection or service. Seasonmaster coils are made with exclusive McQuay Ripple-Fin construction.

McQuay INC.

AIR CONDITIONING
HEATING
REFRIGERATION

"THE SAFE WAY OUT!"

Von Duprin®

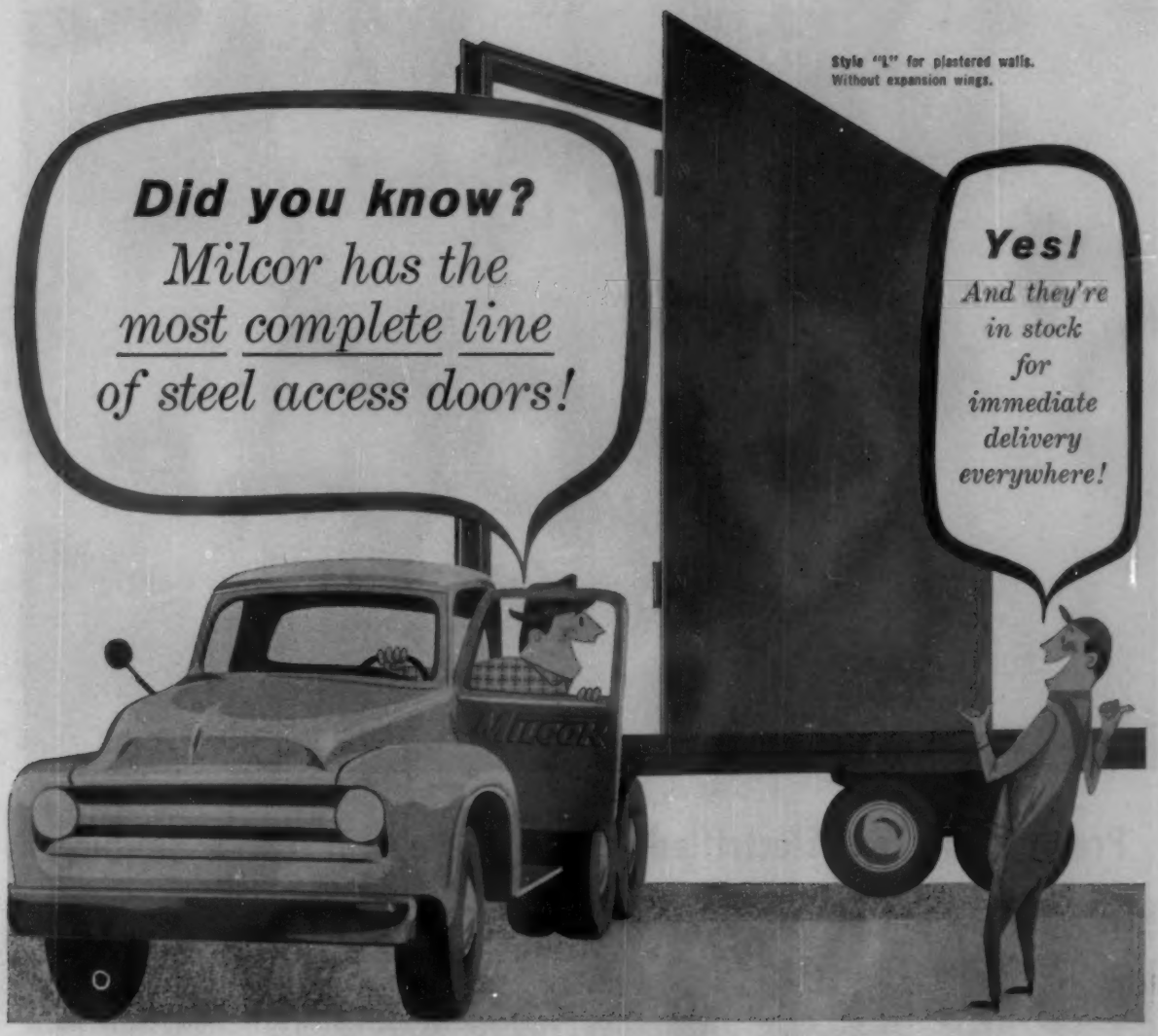
FIRE AND PANIC EXIT DEVICES

● Regardless of size, style or budget, safe schools call for Von Duprin exit devices. Von Duprin equipped exits give sure, reliable service over years of tough, demanding use . . . with minimum maintenance.

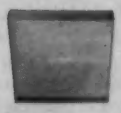
Quality . . . the finest in materials, design and workmanship . . . has been the Von Duprin standard for over 49 years. This high standard plus constant improvements . . . such as concealed devices, X-Bar reinforced crossbars, drop-forged parts, reversible devices, adjustable strikes, and a variety of outside controls . . . has earned a preference for Von Duprin among architects, school administrators and other safety-minded officials.

Such a reputation has helped prominent hardware consultants throughout America handle the Von Duprin line proudly . . . and profitably.

VONNEGUT HARDWARE CO. • VON DUPRIN DIVISION • INDIANAPOLIS 9, INDIANA

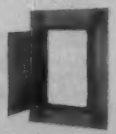

Style "L" for plastered walls.
Without expansion wings.
Did you know?
Milcor has the most complete line of steel access doors!
Yes!
And they're in stock for immediate delivery everywhere!
MILCOR

You can depend on Milcor quality



NEW — Style "A" for acoustical tile up to one inch thick.

Style "M" for masonry, brick, stone, tile, etc.



Style "K" for plastered walls. With expansion wings.

Here are five important reasons why it pays to specify Milcor Steel Access Doors:

1. **Wide selection** of standard and special doors.
2. **Immediate availability** — no holdups on the job.
3. **Trouble-free operation** and quality that will endure.
4. **Flush installation** contributes to clean, modern design.
5. **Economy** — they cost no more than ordinary doors.

See the Milcor Catalog in Sweet's—Section 12a /In—
or write for Catalog No. 202.

ML-11

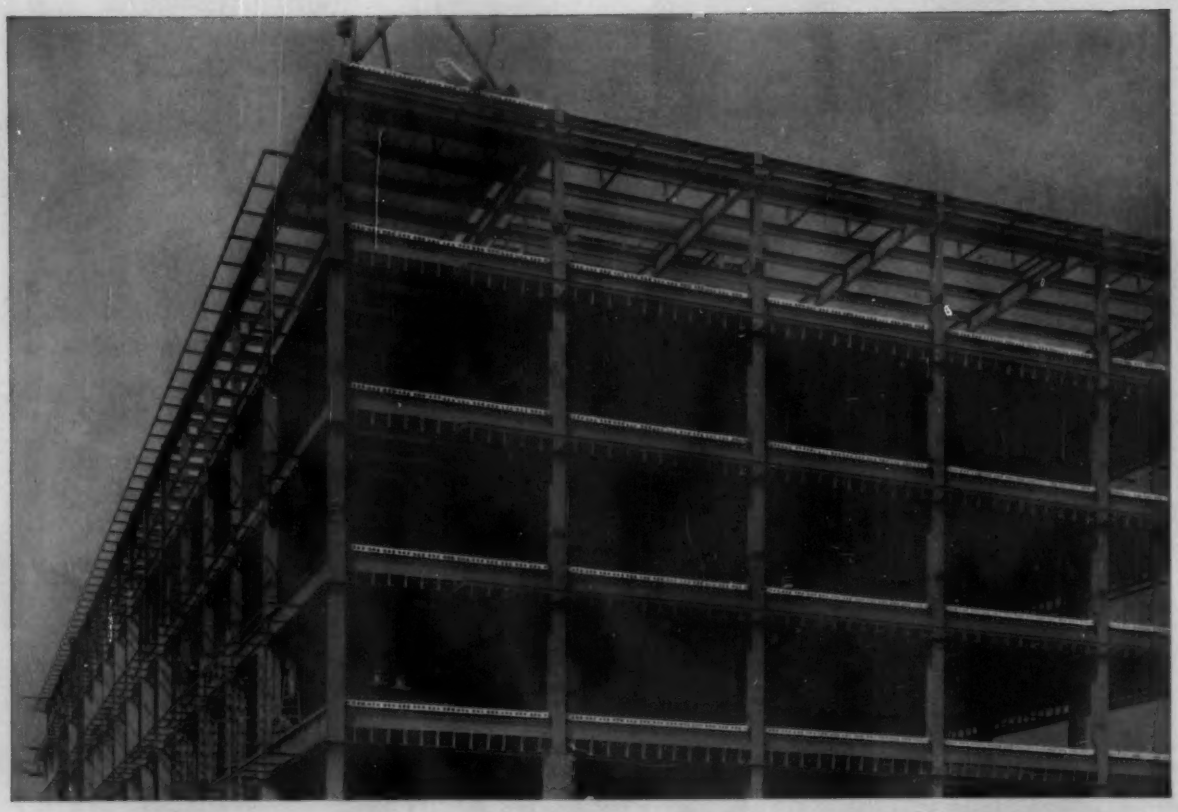
Member of the INLAND Steel Family

MILCOR®

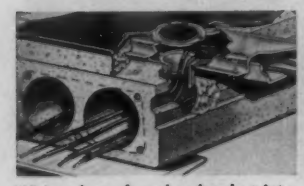
INLAND STEEL PRODUCTS COMPANY

Dept. D, 4033 W. Burnham St. • Milwaukee 1, Wisconsin

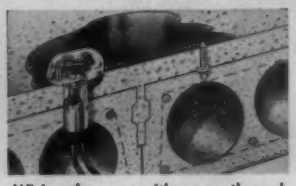
ATLANTA • BALTIMORE • BUFFALO • CHICAGO • CINCINNATI • CLEVELAND • DALLAS • DENVER • DETROIT
KANSAS CITY • LOS ANGELES • MILWAUKEE • MINNEAPOLIS • NEW ORLEANS • NEW YORK • ST. LOUIS.



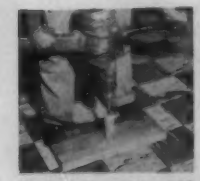
Precast Concrete Electrified Floors In New Research Building



Wiring drops from header duct into cell at handhole junction.



Wiring then runs either way through cell to floor outlet.



To install outlet: drill hole at outlet location.

Next, install fitting in floor and fish wire.

Last, attach electric or telephone outlet box.

This new engineering and research building for the National Cash Register Company in Dayton, Ohio has Flexicore electrified floors.

The steel frame structure was designed for either concrete or steel cellular floors. Concrete was selected because no fireproofing was required on the ceiling and because of other cost and time saving advantages.

In the construction picture above you can see the hollow cells in the exposed ends of the precast floors. These cells are used as electrical raceways, and electrical outlets can be installed in the floor at any point along a cell. Cells are spaced 5 1/3" on centers with the 6 x 16 Flexicore unit used on this job. Conduflor electrical fittings were manufactured by the Conduflor Corp., 3338-G Warren Rd., Cleveland 11, Ohio.

For a copy of the new 32-page Office Building Manual on Flexicore Electrified Floors, write or phone the nearest Flexicore manufacturer listed below, or The Flexicore Co., Inc., Dayton 1, Ohio.

flexicore® ELECTRIFIED FLOORS
with Conduflor® ELECTRICAL FITTINGS

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The Alabama Cement Tile Co.
COLORADO, Denver 1, PO 366
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FLORIDA, Tampa, PO 2189
American Marietta-Company
ILLINOIS, Chicago, Franklin Pk.
Mid-West Flexicore
INDIANA, E. Chicago, PO 539
Calumet Flexicore Corporation
MICHIGAN, Livonia, PO 2006
Price Brothers Company
MINNESOTA, St. Paul E-4
Molin Concrete Products Co.
MISSOURI, E. St. Louis, Ill.
St. Louis Flexicore Inc.

NEW JERSEY, Camden
Flexicore Div. of Camden Lime
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NEW YORK, New York 17
Flexicore Precast Inc.

NORTH CAROLINA, Lincolnton
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OHIO, Akron-Cleveland
Lake Erie Flex., Kent, Ohio
OHIO, Columbus 22
Arrowcrete Corporation

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Price Brothers Company
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Durastone Flexicore Corporation

TEXAS, Houston, 4511 Kyle St.
Flexicore of Texas, Inc.
WEST VIRGINIA, Wheeling
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WISCONSIN, Beloit, PO 809
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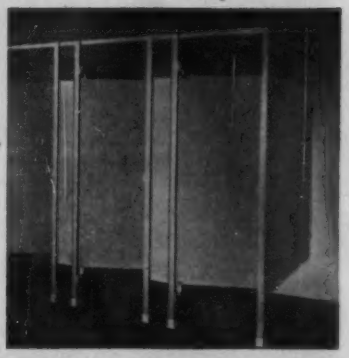
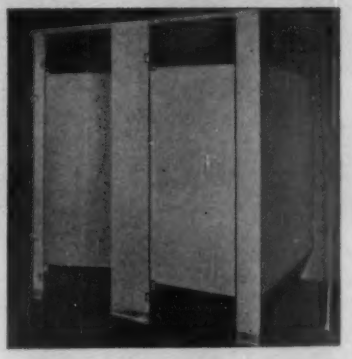
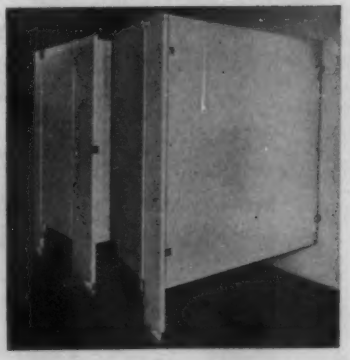
You can specify *Quality* in toilet compartments, too . . .







. . . *you get outstanding quality when you specify NICHOLSON*

Maximum gage metals, where they're needed, assure the right combination of strength and beauty . . . for quality toilet compartments that complement the finest equipment and construction details.

Compare these quality features, and you'll know why discerning architects and builders are specifying Nicholson toilet compartments:

- **Panels and doors are 20 gage, 1" thick**
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- **Moulding is 18 gage, die-drawn**

Standard Nicholson designs range from distinctive, modern to sturdy, utility units . . . all available with attractive and lasting finishes in a variety of colors.

When you're looking for *quality* toilet compartments, without a premium price . . . look to W. H. Nicholson and Company, 12 Oregon St., Wilkes-Barre, Pa. Sales and Engineering offices in 98 principal cities.

NICHOLSON
of Wilkes-Barre

and Feel the Cushioned Flex of KREOLITE Gym Floors

Whatever the action . . . running, jumping, or calisthenics . . . Kreolite gym floors are kinder to the feet.

This lessening of fatigue is a result of Kreolite Flexible Strip End Grain Wood Flooring's cushioned flex and high *resiliency*.

For durable beauty, ease, and economy of maintenance Kreolite flooring has proved its ability to outlast ordinary floors.

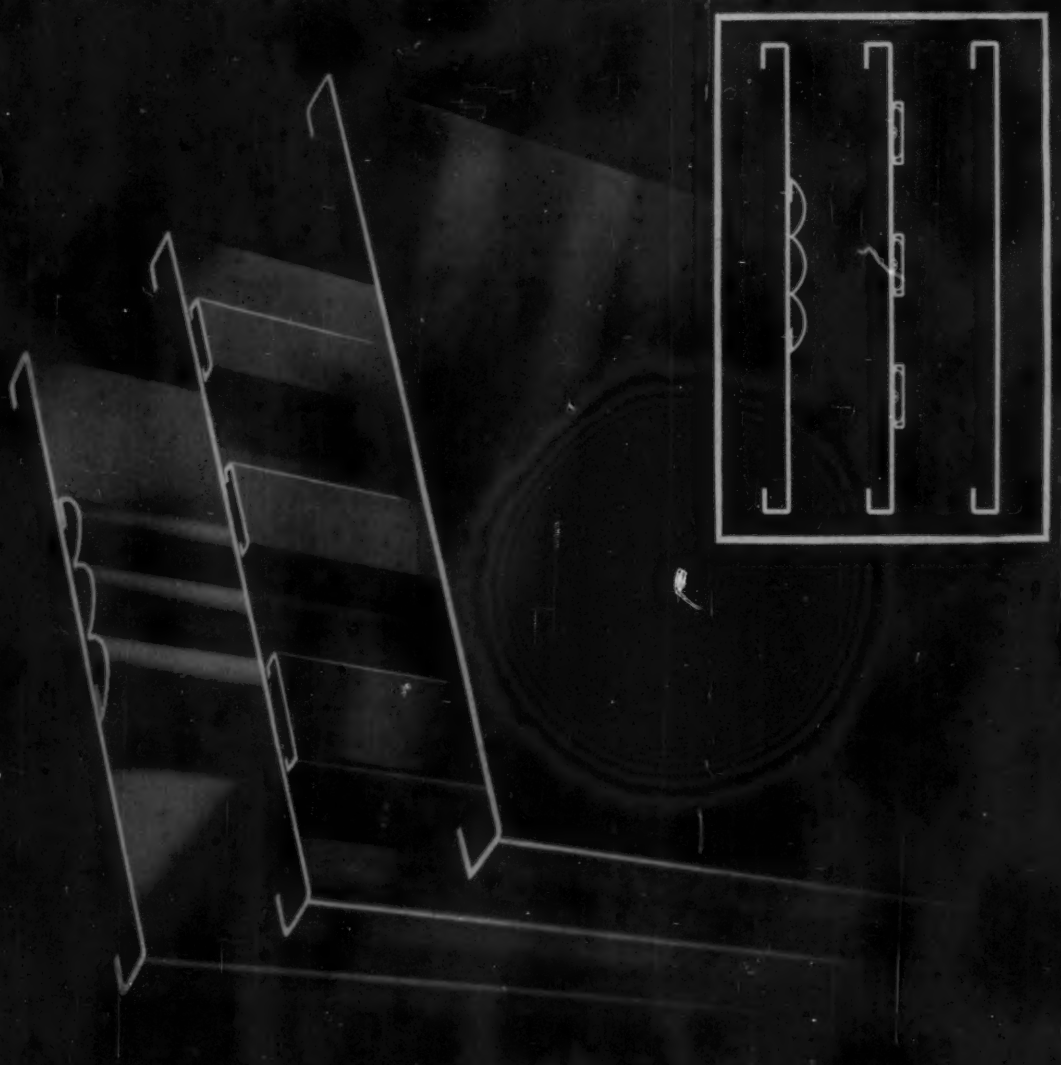
For better *resilient* flooring in gyms, multi-purpose rooms, and shops, get all the facts on Kreolite's many money-saving advantages.

Write today for installation data and specifications.

THE JENNISON-WRIGHT CORPORATION
TOLEDO 9, OHIO

PITTCO®

AWNING BAR SERIES No. 91



. . . offers you three handsome styles to choose from: No. 91, with its clean, unbroken surface . . . No. 91-A, with its distinctive reeded feature strip . . . No. 91-B, with its evenly spaced flutes. These bars embody the grace, beauty and durability found in all PITTCO members. For information on the complete line of PITTCO Metal Products, contact your PITTCO Store Front Representative or refer to Sweet's Architectural File—Section 21.

75th ANNIVERSARY 1883—1958

SYMBOL OF SERVICE FOR SEVENTY-FIVE YEARS

PITTSBURGH PLATE GLASS COMPANY

IN CANADA, CANADIAN PITTSBURGH INDUSTRIES LIMITED

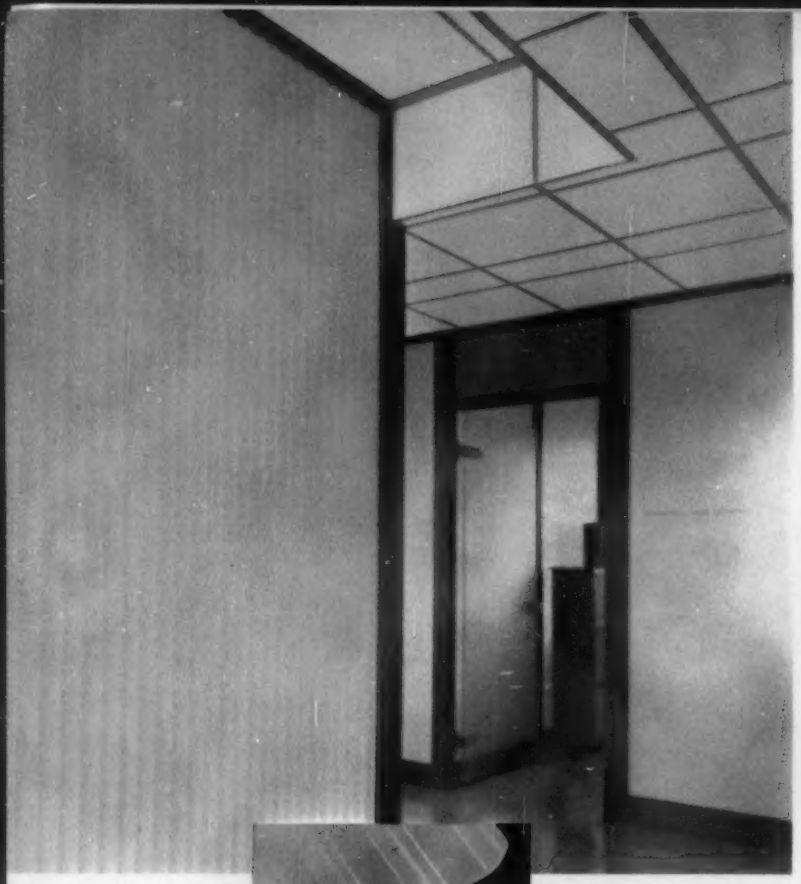
Corrugated glass in reception lobby screens corridor beyond—shares light, decorates. Electric Controller & Mfg. Div. of Square D Company, Cleveland, Ohio. ARCHITECTS: A. E. Rowe & Associates.

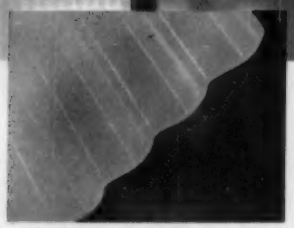
How Blue Ridge solves special problems in offices and commercial buildings

Providing privacy for employes without psychologically boxing them in . . . dividing space without dividing light . . . shutting out an unwanted view without shutting out daylight . . . creating modern décor that is completely functional . . . these are the kinds of problems decorative, translucent patterned glass solves best.

By T. W. Glynn,
Director of Product Development for Blue Ridge Glass Corporation

Functional—In the reception lobby above, the architects achieved a bright, friendly atmosphere to be enjoyed both day and night. During the day, the corridor shares daylight





Offices at Blue Ridge Glass Corporation display products company makes: Huewhite, Huewhite Corrugated and a Securit® Interior Glass Door. DESIGNER: Paul McCobb, New York City.

HUEWHITE CORRUGATED, ⅛ actual size

"Blue Ridge Glass is a designer's foil."

with the window-walled lobby. At night, lights from the corridor beyond cast interesting reflections on the translucent glass. The patterned glass used here is Blue Ridge Corrugated Glass.

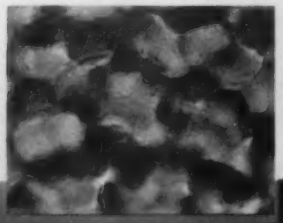
Light and privacy—Maximum use of daylight is obtained in hallway and offices (left) with floor-to-ceiling partitions of Huewhite® glass. For design relief, Huewhite Corrugated is used in some partitions. Occupants feel a sense of privacy. Huewhite delivers very wide light distribution that is almost uniform down to incident of 15 degrees. It scatters daylight appreciably even down to an angle of 5 degrees.

Framing and maintenance

The offices below will not give that "boxed in" feeling because translucent glass partitions make offices seem larger, brighter, more friendly.

Partitions are economical and fast to

VELVEX gives excellent light diffusion



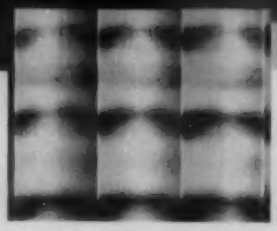
Patterned glass is interestingly used in the offices of the Federated Department Stores, Inc., Cincinnati, Ohio. ARCHITECTS: Potter, Tyler, Martin & Roth. DESIGNERS: Raymond Loewy Associates.

erect. Patterned glass is delivered to the job precut to size. No painting or finishing is required. It can be used with any choice of framing. Blue Ridge Velvex® was used in this modular framing. An occasional washing is the only maintenance required.

Screening unwanted views
Imagine this lovely office (right) marred by a view through the window of an alley or parking lot. Blue Ridge Doublex® effectively shuts out the unwanted view, yet admits an abundance of light.

Design flexibility — Blue Ridge Glass is a designer's foil. It can be used so many ways to introduce light, to heighten a decorative effect. Huewhite glass was used in the office of the Kerite Company (below). Light passing through the Huewhite enriches the traditionally fine woodwork, relieving an otherwise massive effect.

Doublex glass admits light, screens an unwanted view, decorates this office of Seaman & Eisman, Hicksville, Long Island, N. Y. ARCHITECT: Alfred Shakins.



"in DOUBLEX, light dances"

Huewhite combined with rich woodwork enhances the corridors of Kerite Company, New York City. ARCHITECTS: Ebasco Services. INSTALLER: Juno Woodworking.

BLUE RIDGE GLASS CORP.®

First Federal Savings & Loan Association building, Boston, Mass.
BUILDERS: George B. H. Macomber Company. ARCHITECTS: Bastille Halsey Associates.

Exterior glass facing—A new kind of patterned glass called Huetex® is causing excitement in the curtain-wall construction field as a spandrel material. It is 5/16" tempered glass, textured on the weathering side to subdue harsh reflections. Ceramic enamel fused to the back gives it rich, permanent color. The enamel is protected by an atomized aluminum coating that also adds insulating qualities.

Although Huetex is extensively used in smaller structures, like the one shown, it is also used in high-rise buildings. Architects Emery Roth & Sons, New York, recently used Huetex as spandrels for two beautiful office buildings: the 21-story 400 Park Avenue Building and the 30-story Uris Building.

Modernization project—The officers of an expanding savings and loan association were faced with the problem of building a new two-story structure or remodeling the four-story building it occupied (right). Cost estimates indicated that remodeling would be less expensive. Huetex glass facing helped give the building a modern appearance (above). On the basis of architectural renderings, the building owners were able to secure lease commitments for the top two floors long before the remodeling was completed.

For additional information on Blue Ridge Glass, look in Sweet's Architectural Files 7a/Li, 3c/BL and 16d/BL.
Also Sweet's Industrial Construction File 3f/Li, Light Construction File 1f/Li and Plant Engineering File 5b/BL.

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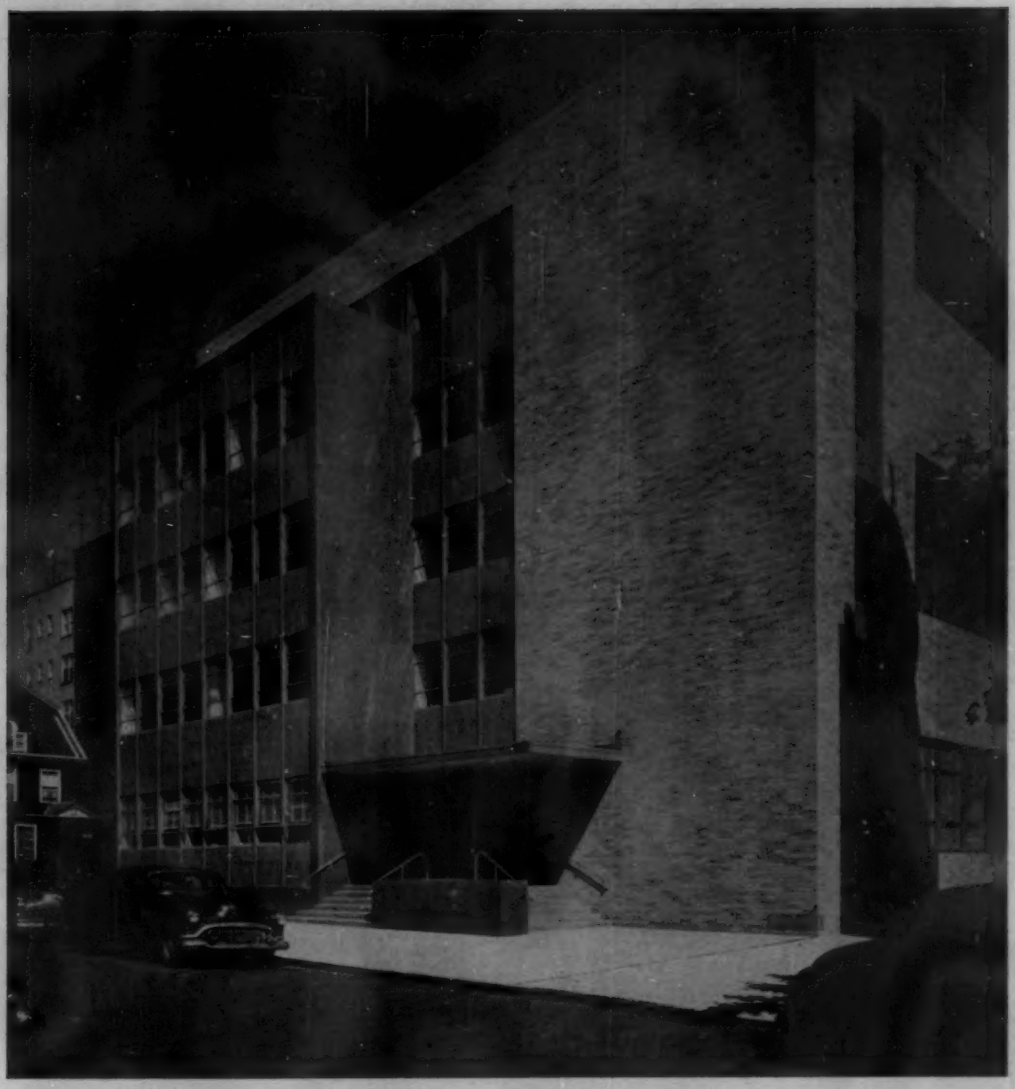

GREEK-AMERICAN SCHOOL OF ASTORIA "ST. DEMETRIOS"
LONG ISLAND CITY, N. Y.
Gustave Iser — *Architect*
P. J. Murphy Const. Co. — *Builder*
Ceramic Veneer in Sea Mist Green units 20" x 24" x 1¼" was specified for spandrels and piers.

When you design with color in mind specify Ceramic Veneer

Visualize any color or texture, polychrome panel or eye-arresting sculpture, whichever fits perfectly into your plans can be reproduced faithfully in Ceramic Veneer. So versatile is this modern architectural terra cotta, so economical when you consider its lasting beauty and simplicity of maintenance, that it's easy to understand why Ceramic Veneer is specified so often for so many different types of buildings. In units large or small, for interiors or exteriors, it combines impressively with all other building materials. Custom-made by Federal Seaboard craftsmen, Ceramic Veneer extends the architectonic horizon . . . provides complete freedom of expression to match function. Without charge we will gladly furnish construction detail, data, color samples, and advice on preliminary sketches involving use of Ceramic Veneer.

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Lobby of the Fontainebleau Hotel • Architect: Maurice Lapidus, AIA, Miami Beach, Fla.

Terrazzo *takes* traffic...stops it too

Neither footsteps nor furniture scrapes faze the beauty of timeless Terrazzo.
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With Terrazzo, you can give your imagination free rein. It's available
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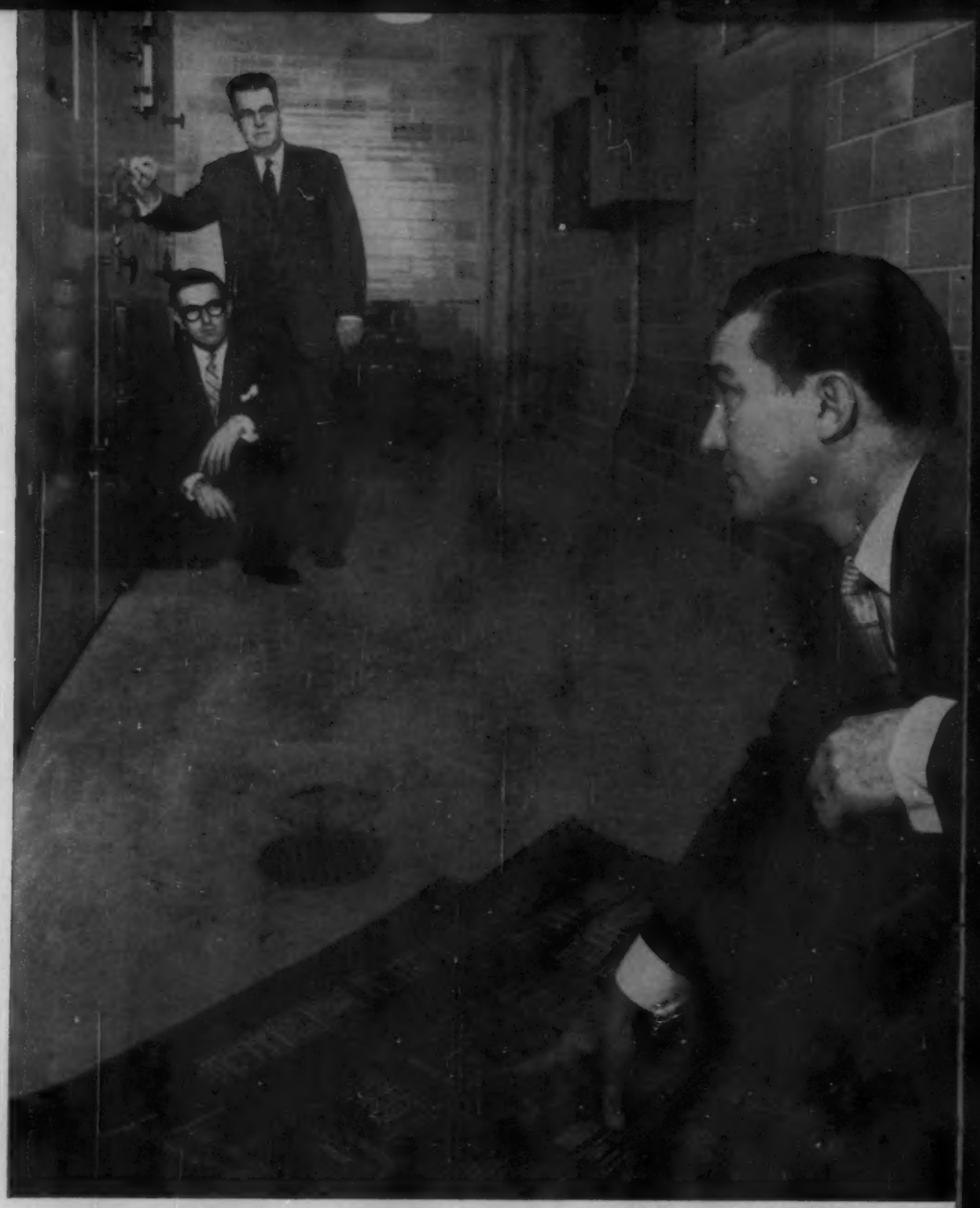
Cardinal Glennon Memorial Hospital for Children, St. Louis, Mo.

Children's hospital is designed for a century of service

One of the two motor control centers with Type B wiring installed in hospital by Westinghouse. Each starter has 480-to 110-volt individual control transformer.

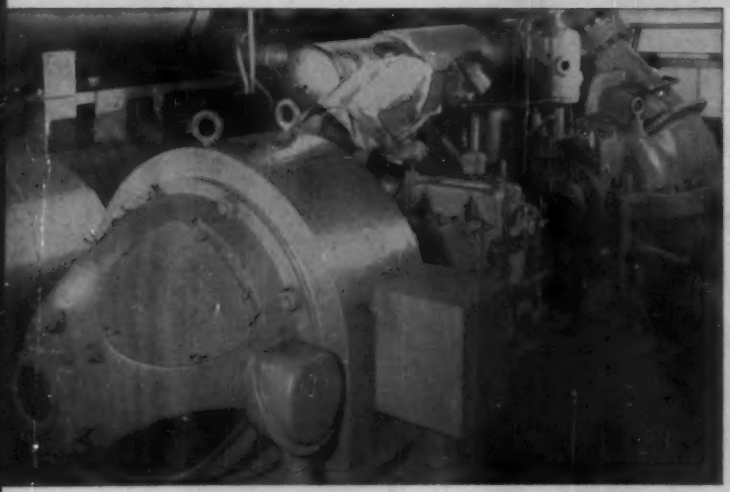
YOU CAN BE SURE...IF IT'S Westinghouse

J-94094-1



Contractor and engineers discuss metal-clad switchgear employing preferred-emergency incoming line transfer arrangement.

J-94094-2



Close-up shows components in air conditioning compressor hook-up. In the foreground is a Westinghouse 250-hp wound-rotor induction motor with Type SU double-helical-type speed increaser—1760 to 6750 rpm.

Transformer room view shows three of hospital's five Westinghouse dry-type self-contained power centers. 75-kva 208-volt wye to 120-volt delta ungrounded isolating power center is in the foreground, and two 225-kva power centers are in the rear.

Scene in hospital conference room includes Norman H. Maas, Electrical Engineer for Maguolo and Quick, Architects; Joseph F. Dwyer, Manager of Hospital's Central Office and Coordinator of Building Committee; Sister Mary Vivian, S.S.M., Director of Occupational Therapy; Louis S. Sachs, S. C. Sachs Co., Inc., Electrical Contractors; (standing) W. L. Phiffer, Westinghouse Construction Sales Engineer; Walter R. Riechman, Westinghouse Electric Supply Co.; and Paul Olschner, Westinghouse Area Sales Manager.

New hospital covers 4½ acres —required 4,000,000 man-hours of labor during 3-year construction period

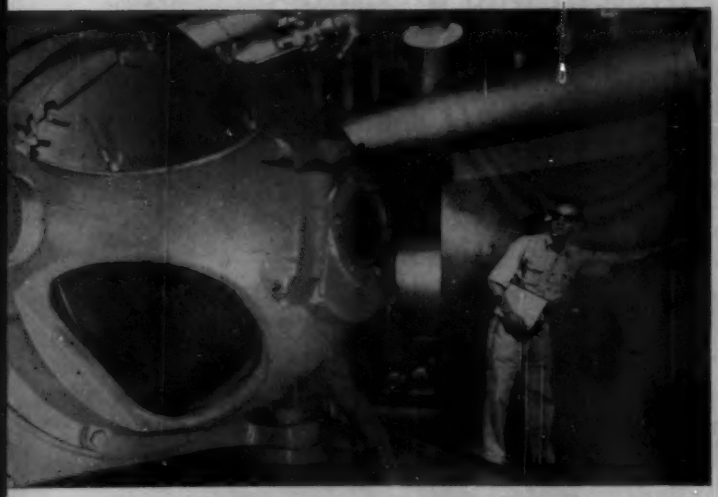
The Cardinal Glennon Memorial Hospital for Children, now in its second year of operation, is an example of architectural planning which looks beyond the immediate demands of hospital form and function to anticipate future hospital requirements. The man-hours of labor which went into the actual construction of the hospital reflect the many other hours which were devoted to careful design and engineering of the institution.

The design criteria for the building was established at 100 years, and all material and equipment was specified on that basis. Important in this long-range planning was the electrical distribution system which was required to provide failure-free service for the hospital and also required to be capable of expansion as needed.

Westinghouse equipment, including elevators, was selected for the entire hospital electrical distribution system, and after exhaustive studies by the architect's electrical engineers, in cooperation with Westinghouse engineers, it was determined that duplicate primary service system was best suited to the hospital's present and future requirements. Details of the Westinghouse equipment used in the hospital are illustrated here. Additional information about how Westinghouse helped meet the demands of this exacting hospital requirement and can help you in solving your electrical needs is available. See the Westinghouse Electrical Construction Engineer nearest you or write Westinghouse Electric Corporation, Box 868, Pittsburgh 30, Pennsylvania.

YOU CAN BE SURE...IF IT'S Westinghouse

J-94094-3



Operator is adjusting rpm of one of two 250-hp compressor motors. On-off switch is on column at right and motor control components are in large enclosed cabinet.

Westinghouse Type NLAB Quicklag® breaker lighting panelboards. A total of 42 lighting panelboards and 10 power distribution panelboards are installed in the hospital.

Illustration shows the utilization of individual Westinghouse motor controls. The four vacuum pumps in the foreground are individually controlled by the motor controls being operated in the background.

All-Westinghouse electrical system was unanimous choice for long-term service

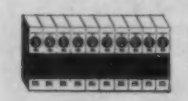
The architect, electrical engineer, electrical contractor and building manager for the hospital all agreed on Westinghouse electrical equipment as first choice for continuous, failure-free performance, minimum maintenance and for the ease with which necessary future expansions can be accomplished.

The Cardinal Glennon Memorial Hospital cares for children between the ages of one to twelve, regardless of race, color or creed.

Cardinal Glennon Memorial Hospital for Children
Architect-Engineer: Maguolo and Quick
Electrical Contractor: S. C. Sachs Co., Inc.
General Contractor: John B. Gutman Construction Co.
Westinghouse Distributor: Westinghouse Electric Supply Co.

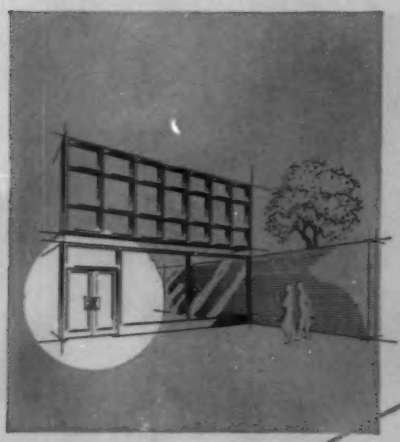
J-94094-4

YOU CAN BE SURE...IF IT'S Westinghouse



Over 275 Pages Westinghouse Data In Sweet's Architectural File.

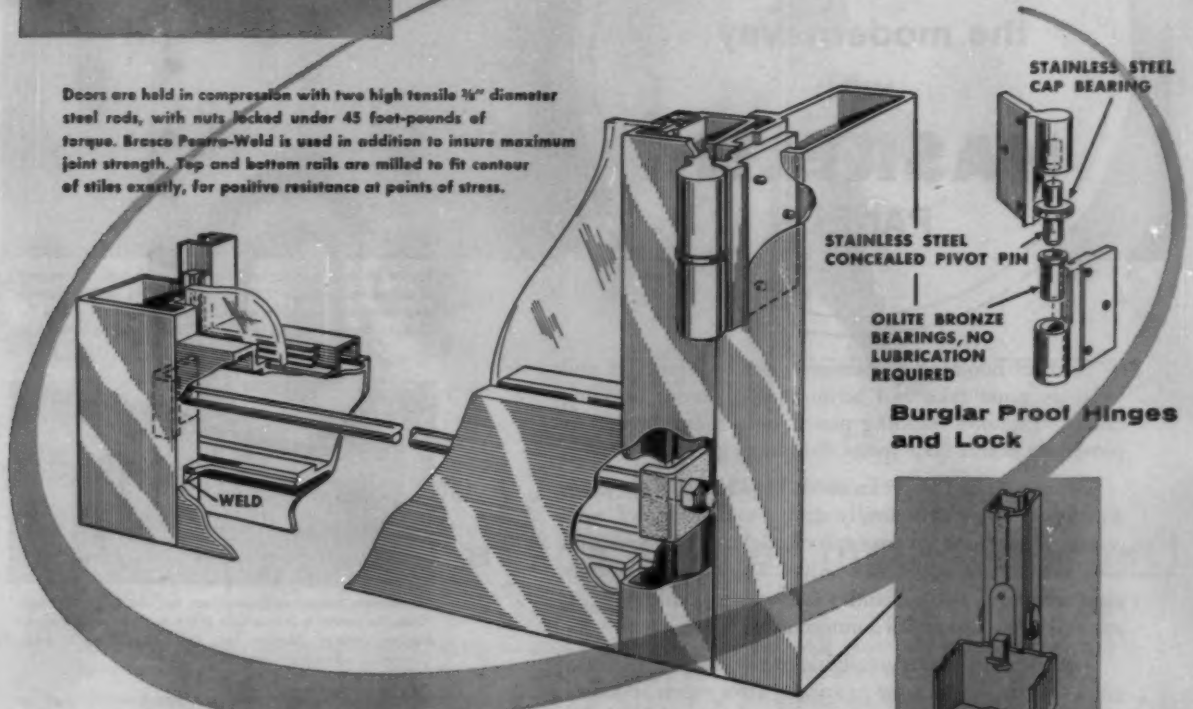
INSIDE INFORMATION



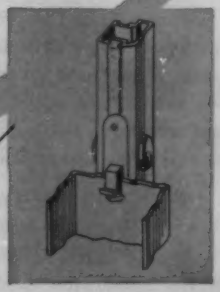
about Brasco Entrance Construction

We have nothing to hide behind the beauty of line and finish characteristic of Brasco Aluminum Entrances. See for yourself how we attain maximum door rigidity to assure a lifetime of hard service, without maintenance. Here you can **look right into** the actual door construction:

Doors are held in compression with two high tensile ⅜" diameter steel rods, with nuts locked under 45 foot-pounds of torque. Brasco Penetro-Weld is used in addition to insure maximum joint strength. Top and bottom rails are milled to fit contour of stiles exactly, for positive resistance at points of stress.


WELD
STAINLESS STEEL CAP BEARING
STAINLESS STEEL CONCEALED PIVOT PIN
OILITE BRONZE BEARINGS, NO LUBRICATION REQUIRED

Burglar Proof Hinges and Lock



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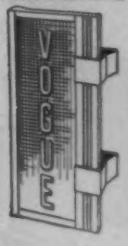

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Taylor University in Upland, Indiana is the latest university to utilize Haskelite building panels. This 176-student dormitory requires very little maintenance. Architect—Orus O. Eash, Ft. Wayne, Ind. Contractor—Bowman Construction Co.

■ To meet booming enrollments, our colleges and universities must take full advantage of every building dollar. Haskelite building panels help them do this by providing bonus floor space. Buildings go up faster, too.

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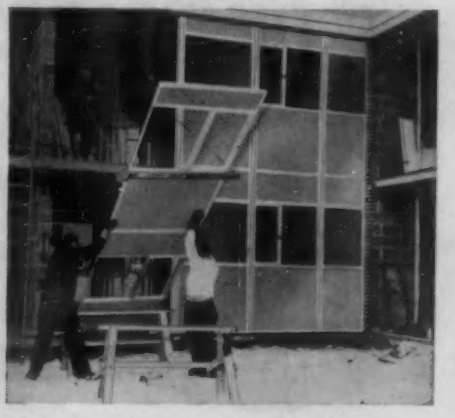
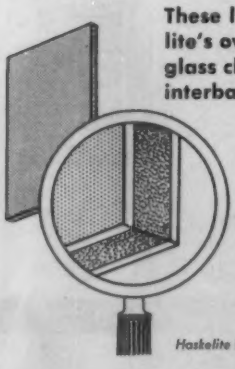
Haskelite panels are available in a wide range of stock sizes and thicknesses, or in special sizes when specified. For the complete story on the advantages of Haskelite panels, write: Haskelite Manufacturing Corporation, Department BQ-4, Grand Rapids 2, Mich.

The modern, attractive appearance that can be gained with Haskelite panels is shown here in the students' dormitory at Marion College, Marion Ind. Architect—Orus O. Eash. Contractor—Bowman Construction Co.

New student housing at Michigan State University goes up rapidly with Haskelite panels. Entire wall can be installed without expensive erection equipment. Architect—Manson Carver Associates, Lansing, Mich. Contractor—Christman Co.



These lightweight panels incorporate Haskelite's own Polyester Resin impregnated fiberglass cloth faces, bonded to cement asbestos interbands, and a foamed polystyrene core.



HASKELITE
MANUFACTURING CORPORATION
Grand Rapids 2, Michigan

Haskelite is a registered trademark

Call the man from Fenestra for

Classroom doors at the lowest installed cost!

It looks like a costly custom-made door, but this is a *stock* door by Fenestra®, specially engineered for school use.

These new Fenestra Hollow Metal Doors swing open smoothly, close quietly. There's "quiet", built into every Fenestra door. You save year after year on maintenance because Fenestra Doors can't warp, swell, stick or splinter. They last a lifetime! And in addition, you get the lowest installed cost because:

1. You buy a *complete package*—door, frame, hardware, completely machined and fitted at the factory.

2. Erection is fast—one man with a screw driver can hang a door in minutes after the frame is installed.

3. You have a complete selection of door types (1⅜" and 1¾") of distinctive designs and features—*all mass produced.* Custom quality at *stock* door prices!

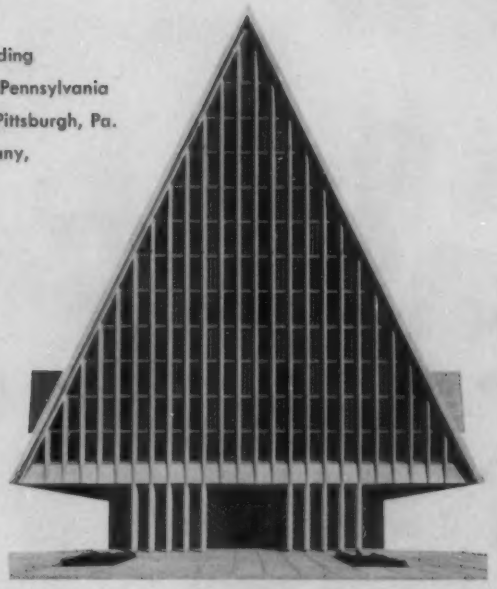
Ask your Fenestra representative (listed in the Yellow Pages) to help you in your selection and specification of doors, frames and hardware. Or, write to Fenestra Incorporated, Department AR-4, 2252 East Grand Boulevard, Detroit 11, Michigan.

Let the man from Fenestra be your "door man"

Fenestra HOLLOW METAL DOOR FRAME • HARDWARE UNITS

YOUR SINGLE SOURCE OF SUPPLY FOR DOORS • WINDOWS • BUILDING PANELS • CURTAIN WALLS

Lodge Hall and Recreation Building
Masonic Home, Elizabethtown, Pennsylvania
Architects: Mitchell & Ritchey, Pittsburgh, Pa.
Contractor: The Pottiger Company,
West Reading, Pa.



design possibilities unlimited! custom-engineered curtain walls

. . . by *Fenestra*

One of these buildings is curtained with steel, the other with aluminum. Both systems are engineered by Fenestra®. They demonstrate the unfettered design freedom you have with this one-source curtain wall service.

We take your building design—single story or high-rise monumental—and engineer, fabricate, deliver and erect the curtain wall . . . *as a package!* Ordering from a *single* responsible source saves you the time and trouble of searching out and fitting together components from various sources. Fenestra coordinates production, delivery and erection to save time, money and eliminate confusion.

Fenestra offers you a wide selection of steel or aluminum curtain wall systems. A choice of subframes, windows and mullion patterns . . . a choice of vents including projected, vertical pivoted, double hung, top hung and casement . . . a choice of insulated panels, plain or embossed, porcelain enameled steel or aluminum. All materials, *including the panels* are produced by Fenestra.

Your local Fenestra representative can give you the details. Call him today—listed in the Yellow Pages—or write Fenestra Inc., Department AR-4, 2252 East Grand Boulevard, Detroit 11, Michigan.

Fenestra
INCORPORATED

Your Single Source of Supply for
CURTAIN WALLS • WINDOWS • BUILDING PANELS • DOORS

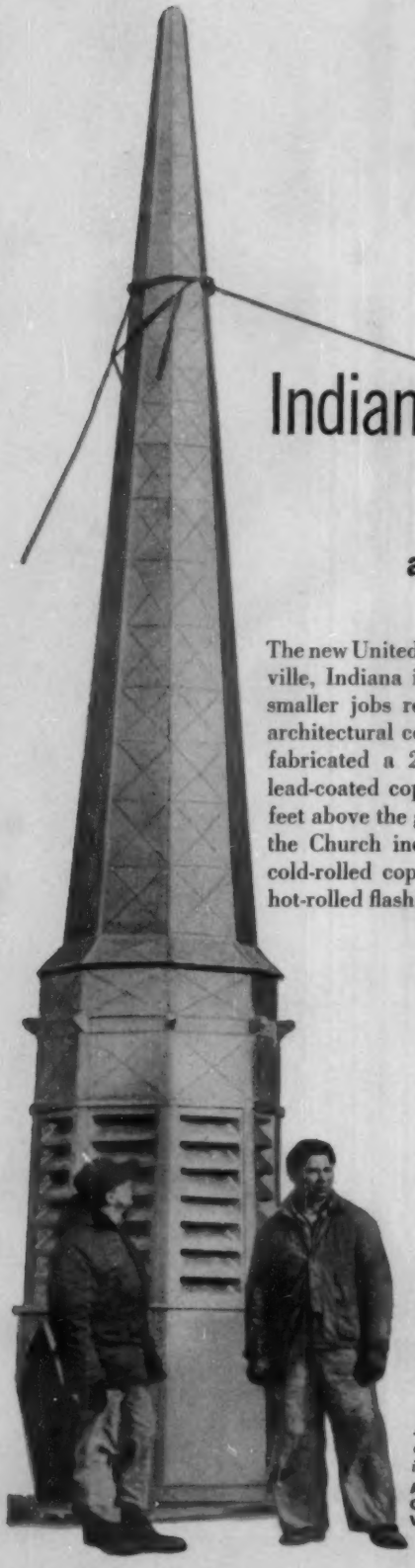
Sheraton Hotel, Philadelphia, Pennsylvania
Architects: Perry, Shaw, Hepburn and Dean, Boston, Mass.
Contractor: McCloskey & Company, Philadelphia, Pa.

Indiana church gets copper steeple

Architect Says, "We used copper for its attractive appearance and long-lasting service"

The new United Brethren Church in Kendallville, Indiana is typical of the hundreds of smaller jobs relying on the plus values of architectural copper. Howard Dodge & Son fabricated a 28-foot steeple from Chase® lead-coated copper, lofted it to position 85 feet above the ground. Other copper used in the Church includes 640 feet of 30" girth cold-rolled copper gutter plus copings and hot-rolled flashing. All copper involved is by Chase — and purchased from Schaab Metal Products, local Chase Distributor.

Whatever your needs for architectural copper in the buildings you design or build, you'll find your nearest Chase Representative ready to help you with specific products, specifications and recommendations. You can reach him locally, or get in touch with Chase Brass & Copper Co. headquarters, at Waterbury 20, Connecticut.



Just before raising the lead-covered copper steeple for United Brethren Church in Kendallville, Indiana.

Architect: Alves O'Keefe, Plymouth, Ind.
Contractor: Howard Dodge & Son, Angola, Ind.
Wholesaler: Schaab Metal Products Company.

Chase
BRASS & COPPER CO.
WATERBURY 20, CONNECTICUT
SUBSIDIARY OF KENNECOTT COPPER CORPORATION

The Nation's Headquarters for Brass, Copper and Stainless Steel

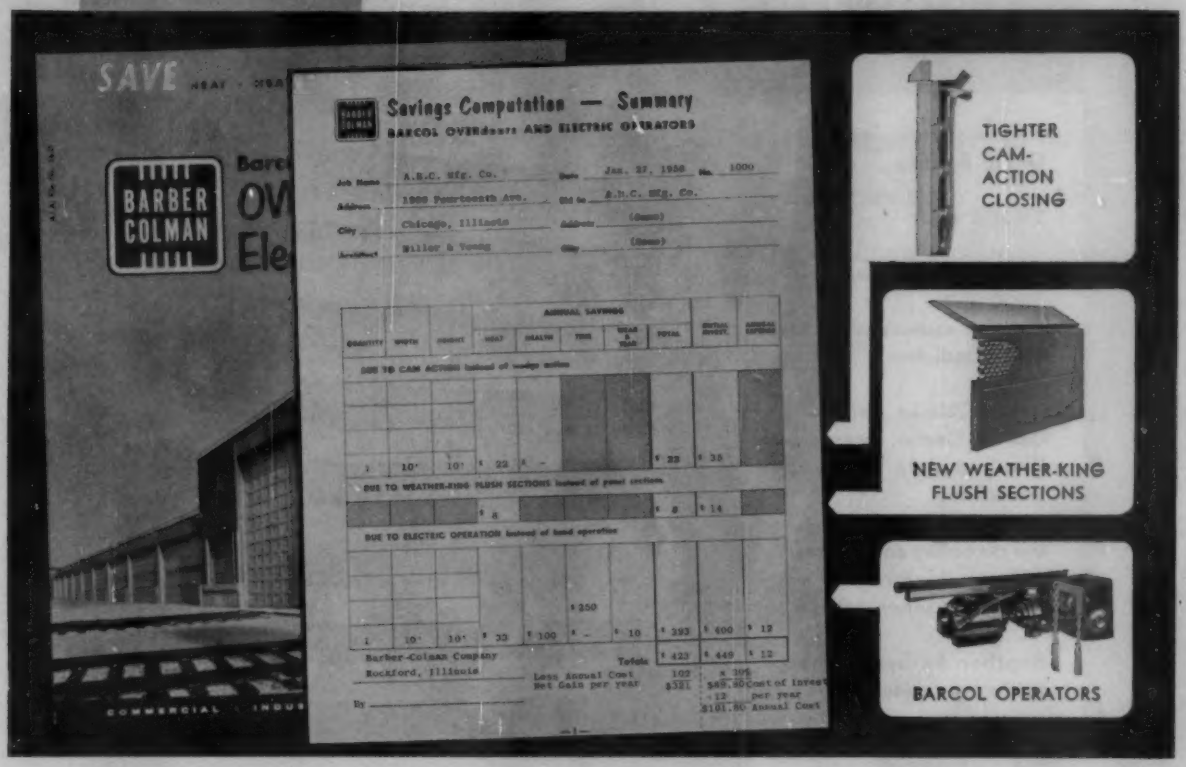
Atlanta Baltimore Boston Charlotte Chicago Cincinnati Cleveland Dallas Denver Detroit Grand Rapids Houston Indianapolis Kansas City, Mo. Los Angeles Milwaukee Minneapolis Newark New Orleans New York (Maspeth, L. I.) Philadelphia Pittsburgh Providence Rochester St. Louis San Francisco Seattle Waterbury

THE MARK OF QUALITY

BARBER COLMAN

the plant you're designing requires this newest efficiency computation by the Barcol OVERdoor distributor

. . . NO CHARGE OR OBLIGATION



Shows how much special OVERdoor features cut heating losses and nonproductive labor.

Send for bulletin and typical 4-page estimate demonstrating Barber-Colman's new method of predicting *how much* extra operational efficiency can be achieved in a plant through special OVERdoor features. Computation is based on prevailing local weather conditions, function of plant, and use of doors . . . compares dollar savings with initial costs and maintenance of the special features.

Annual net saving of several hundred dollars per door is *frequently* demonstrable. Features often pay for themselves within two years and continue to yield cash savings for many years thereafter. Bulletin presents features in detail plus helpful installation data and drawings. Call your Barcol distributor (under "Doors" in the phone book) or send coupon.

BARBER-COLMAN COMPANY

Dept. P84, Rockford, Illinois

☐ Send Barcol OVERdoor's Savings Bulletin and sample four-page computation.

☐ Have the local Barcol distributor call us and arrange for demonstration.

Name_____ Firm_____

Address_____ City_____ State_____

THE MARK OF QUALITY

BARBER COLMAN

Architects:
Loebl, Schlossman & Bennett, Chicago

Electrical and mechanical engineers:
William Goodman and Associates, Chicago

Air conditioning contractor:
Narowetz Heating and Ventilating Company

America Fore Insurance Group Building

230,000 sq ft

Fully air conditioned

Five fan systems plus perimeter radiation

Barber-Colman Electronic Control Center, incorporating complete freeze-up protection

Uni-Flo ceiling and side-wall diffusers, high-velocity air valves, and return grilles

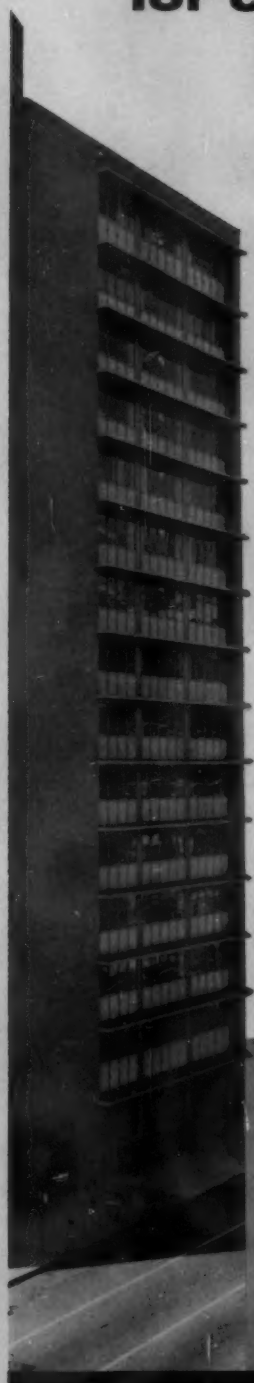
Another Barber-Colman comfort combination

Contact your nearby Barber-Colman Field Office

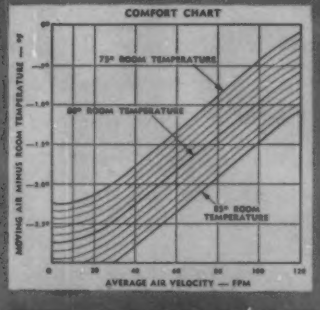
See how the Barber-Colman comfort engineer offers better assistance and assures better results through *combined* automatic controls and air distribution

one source...one responsibility...

America Fore selects Barber-Colman for comfort insurance



More and more engineers and architects throughout the country are realizing the advantages of an exclusive comfort system—a combination of Electrionic automatic controls and Uni-Flo engineered air distribution products from one source, Barber-Colman. The Barber-Colman comfort engineer will consult during the design, will assume responsibility for the selection and placement of equipment and is available for supervision of installation and final balancing of the combination system. To engineers and architects, that means a comprehensive analysis of a project's automatic control and air distribution requirements and a clear definition of responsibility concerning these vitally related products, eliminating the delays resulting from conflicting obligations.



Comfort Standards

A chart, developed and used by our engineers, indicates conditions of air movement and temperature in occupancy zone. Line shown for each average room temperature is limit of satisfactory comfort conditions. Points above line fulfill Human Comfort Standards. Copies available upon request.

New fully illustrated bulletin details advantages of temperature control and air distribution system combinations available through Barber-Colman. Ask for Bulletin F-8326.

BARBER-COLMAN COMPANY

Dept. D, 1604 Rock Street, Rockford, Illinois

North Ward School

PORTLAND CEMENT ASSOCIATION PHOTOS

For Low Cost Beauty

Architectural Concrete and Concrete Masonry made with Ideal Cement provide a BEST BUY for Schools

An economical dual application of concrete was developed for the construction of the North Ward Elementary School in Superior, Nebraska. On both the inside and outside of this handsome school building, concrete walls were left exposed.

Architectural concrete exterior walls provide an attractive, low-annual-cost exterior treatment for the entire building. On the inside, lightweight concrete masonry walls fulfill a load-bearing as well as a decorative purpose. The interior ceiling was constructed of exposed concrete filler-blocks to provide additional economies when used with the thin concrete roof slab.

This unique school building provides a total of 22,750 sq. ft. of space at a cost of $11.33 per sq. ft.—is an outstanding example of the way architectural concrete and concrete masonry provide beauty, economy, and long life with minimum maintenance. Ideal Cement was used exclusively for all concrete and concrete masonry units in North Ward Elementary School.

PORTLAND IDEAL CEMENT

IDEAL CEMENT COMPANY

DENVER, COLORADO

15 Plants and 4 Terminals Serving
Some of the Most Rapidly Growing Areas of the Nation

This is the administration building with its aluminum panel walls and 367 Thermopane windows. The units have an outer pane of Heat Absorbing Plate Glass. Below is a view of the lobby reception room.

Revolution in Ravenswood

An on-the-spot L·O·F report on Kaiser Aluminum & Chemical Company's giant plant in Ravenswood, West Virginia

Here at the mouth of Sandy Creek, on land once owned by Revolutionary General George Washington, you can see in action the latest phase of another revolution. The new industrial revolution that is changing the face of America.

In this little town of Ravenswood, the population is leaping from the 1,200 who lived here in 1953, to an estimated 18,000 by 1960. Acre after acre of new homes will spring up, all backed by individual capital. New banks, barbershops, bowling alleys, schools, restaurants. Because seven miles from town, on a 3,200-acre site, hums a giant new $200,000,000 plant—one of the largest integrated aluminum plants in the world.

This sprawling, shining giant, with its strikingly beautiful glass and aluminum administration building, draws job applicants like a light draws moths—60,000 hopefuls for 5,000 jobs. And there is such a parade of sight-seers on Sundays that the company put in picnic grounds beside the main drive.

We went to Ravenswood to get the whole story from the people who are a part of it. Here it is, in their own words:

L·O·F GLASS

L. A. Amos—*Works Manager:* "We had more than manufacturing in mind when we planned this plant. We wanted, of course, modern and efficient facilities. But we also wanted a plant which would make the townspeople proud. Buildings so beautiful they would set a standard for the city that would soon grow around them.

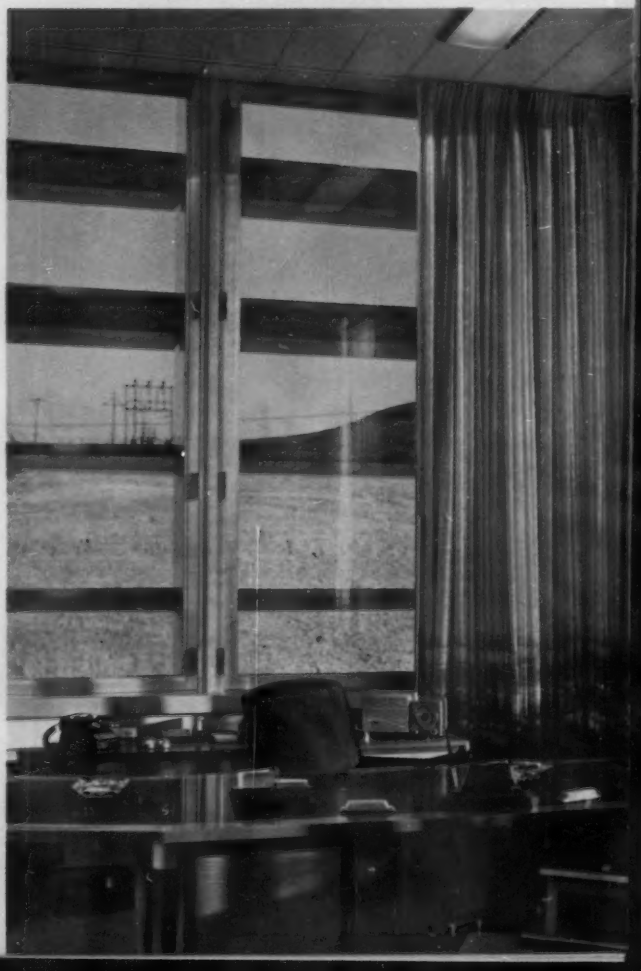
"This administration building for example, is 34,000 square feet of comfort and beauty and freedom from maintenance. These walls are insulated aluminum panels. And those big windows are double-paned with the outside pane made of heat absorbing glass.

"How do the employes like it? Bob Button, is the best one to answer that."

This is the office of Works Manager L. A. Amos. Ceilings: Aluminum acoustical pans. Walls: Insulated aluminum panels. Windows: **Thermopane** with Heat Absorbing Plate Glass.

Robert Button—*Works Controller and Administrative Superintendent:* "I think almost all of my people are happier here than anywhere else they've ever worked. This building is wonderful in the winter, the insulated aluminum panels and *Thermopane* insulating glass keep the temperature warm and balanced all winter. (Balance is tough to get because conditions change so fast—they say around here that if you don't like the weather, just wait 15 minutes.) Our girls' desks are right next to the windows because our staff is growing so fast—but they seem to be comfortable even when it's really cold outside. And in the summer (it gets up to around 100° outside) the aluminum exterior and the heat absorbing glass in *Thermopane* helps keep the building cool. Seems to help the air conditioning. At least it's more comfortable than any *I've* experienced before.

"Perhaps you'd like to talk firsthand to one of the girls":



LOF GLASS

Notice how close the desks are to the windows in this general office. **Thermopane** keeps it comfortable even on coldest days. There are 8,800 square feet of **Thermopane** insulating glass in this administration building.

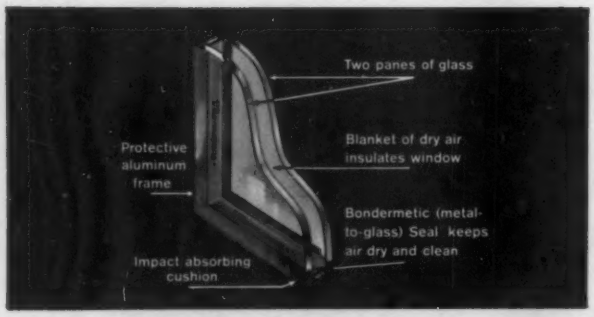
Mrs. June Curry—*Secretary:* "I think we have the best working conditions in the valley. We like everything about our beautiful building. We like the drapes that match the aluminum panels, and the aqua walls that go so well with the color of the glass in windows. Incidentally, those windows are wonderful. They make the offices so light and bright. They never fog up or feel cold in the winter. It's comfortable near them *all* year around. If it weren't for our wonderful working conditions we'd have a hard time getting the kind of girls we have. Most of the qualified girls who used to live around here had taken jobs in places like Columbus and Cleveland and Cincinnati.

"Now they've moved back home. Some of them even commute from Parkersburg (38 miles away), Charleston (51), Point Pleasant (29), Middleport, Ohio (30). They *must* like to work here."

Note: After talking to people at the plant, we asked Ravenswood Mayor W. S. Ritchie for a comment. Here's what he had to say:

W. S. Ritchie—*Mayor of Ravenswood:* "They didn't tell you, but Kaiser not only contributed some $100,000 for the community planning consultants who drew up a plan to guide the growth of Ravenswood, they built a modern 20-room, aluminum and glass school for the kids. Leased it back to the county for $1 a year. You ought to see it. It's a bright, beautifully daylighted school. The entrance with its *Tuf-flex* glass doors is open and inviting and friendly. There's a wall of big aluminum-framed windows in every classroom. And in the walls of the halls a row of windows near the ceiling brings light from the classrooms into the corridors. Artificial lights aren't needed in the hall. Like the plant, our new school is modern, handsome, and a real asset to the community."

This is a small section of the new 20-room school designed by architects Perkins and Will, Chicago, and leased to the community by Kaiser. Windows are L•O•F Daylight Walls. Entrance is L•O•F **Tuf-flex** Glass Doors.


Two panes of glass
Protective aluminum frame
Blanket of dry air insulates window
Bondermetic (metal-to-glass) Seal keeps air dry and clean
Impact absorbing cushion

THERMOPANE®

For maximum comfort and for heating and air-conditioning economy use *Thermopane* insulating glass in windows. Heat loss is cut almost in half compared to single glazing. Drafts near windows are reduced. Outside noises are muffled. *Thermopane* is available in two new improved types: *Thermopane* with metal-to-glass *Bondermetic Seal*® and enclosed in an edge-protecting aluminum frame; and *GlasSeal*® *Thermopane*, an all-glass insulating unit that is ideal for pre-glazed sash.

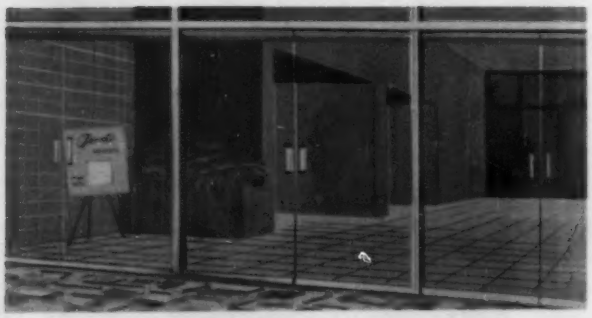
PARALLEL-O-PLATE®

To keep distorted reflections from spoiling the appearance of your building, use *Parallel-O-Plate* Glass in the windows. It is *twin-ground* for more freedom from distortion. The glass in the two demonstration windows shown here is backed with black composition board to simulate the mirror effect of windows in a building. In the window at the left, glazed with *Parallel-O-Plate*, the reflection is mirror-perfect. In the other, glazed with sheet glass, note the distorted reflection.

HEAT ABSORBING PLATE

For the comfort of those who must work near windows . . . for reducing the initial cost of air-conditioning equipment and its operating cost . . . L·O·F makes two kinds of ¼″-thick polished plate glass: Heat Absorbing and *Parallel-O-Grey*. L·O·F Heat Absorbing Plate Glass has a pleasing blue-green color. *Parallel-O-Grey* has a neutral grey tone that does not change the color of objects seen through it. Both offer relief from sun glare, *Parallel-O-Grey* to a greater degree. Comparison of solar heat transmission is as follows:

¼″ REGULAR PLATE GLASS . . . 79.9%
¼″ HEAT ABSORBING PLATE . . . 46.3%
¼″ PARALLEL-O-GREY . . . 45%



TUF-FLEX® DOORS

These frameless, clear-glass doors *invite* visitors into a building. And they can withstand, with virtually no maintenance, all of the traffic they help create. Made of ½″-thick or ¾″-thick tempered plate glass, they are 3 to 5 times tougher than regular plate glass of the same thickness. There are 16 types in finished sizes up to 48″ in width and 108″ in height. *Tuf-flex* Doors are furnished complete with cast bronze or alumilited aluminum fittings which are designed to take standard pivot hinges and builders' hardware.

• **For complete information** on any of these L·O·F products, call your L·O·F Distributor or Dealer (listed under "Glass" in the yellow pages). Or write to Libbey·Owens·Ford Glass Company, 608 Madison Ave., Toledo 3, Ohio.

AP-801

L·O·F GLASS

LIBBEY·OWENS·FORD

A GREAT NAME IN *glass*

TOLEDO 3, OHIO

Builder Dale J. Bellamah (right) discusses the location of a telephone outlet with J. P. McBurney of Mountain States Telephone and Telegraph Company.

"Concealed telephone wiring helps me merchandise my homes"

—says Mr. Dale J. Bellamah, Builder, of Albuquerque, New Mexico

"Right now I'm building a community of some 2000 homes," says Mr. Bellamah. "And in every home we're putting concealed telephone wiring.

"It's a real sales aid. It helps me merchandise my homes. We list it in our advertisements, and we point to it as an example of what we mean by our slogan, 'First in size—first in new ideas.'

"If you're in the business of building modern homes for people with modern ideas, you can't expose the telephone wiring any more than you can expose the plumbing!"

Mr. Bellamah is the biggest builder in New Mexico. During the past ten years he has built upwards of 5000 homes. He has been on the Executive Committee of NAHB among many other positions he has held in that Association, and in 1956 he was National Chairman of the Military Housing Committee. Mr. Bellamah is one of many trend-minded builders throughout the country who are convinced that concealed telephone wiring is a modern feature that helps them sell their homes in today's highly competitive market.

* * *

Your local Bell Telephone Business Office will be glad to help you with concealed wiring plans. For details on home telephone wiring, see Sweet's Light Construction File, 8i/Be. For commercial installations, Sweet's Architectural File, 32a/Be.

BELL TELEPHONE SYSTEM

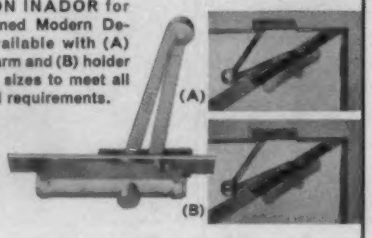
A continuing series of outstanding office buildings, schools, churches, hospitals, and industrial structures using NORTON DOOR CLOSERS.

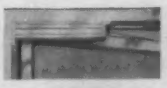
JOHN E. BRINK, A.I.A.—STATE ARCHITECT

New Kansas State Office Building Joins the Distinguished Roster of Norton Inador® Users

Complete Norton Line Meets Every Door Closer Need

NORTON INADOR for Streamlined Modern Design Available with (A) regular arm and (B) holder arm...4 sizes to meet all standard requirements.





NORTON 750: New corner design with concealed arms for all type doors, particularly narrow rail doors.

Norton Surface-type Closers are available for all installations where concealment is not essential.

NORTON 703E: Compact surface mounted type...first closer with extruded aluminum alloy shell.

An interior to match the dramatic simplicity of this imposing exterior called for painstaking attention to every detail, including door closers. The *Norton Inador* Closer was selected because it is so nearly invisible. Its compact mechanism being entirely concealed in a mortise in the top rail of the door, there is nothing to detract from the beauty of the door itself.

There is also no sacrifice of efficiency. Every *Norton Inador* is designed and built to last longer...require less maintenance and provide the long-range economies imperative in all public buildings. If, therefore, you now have such a building "on the boards," investigate *Norton Inador* while door closer specifications are still undecided. Write today for FREE copy of the new catalog on Norton's full line of concealed and surface door closers including important new models.

FOR ADDITIONAL MODELS, CONSULT NEW #57 CATALOG

NORTON DOOR CLOSERS

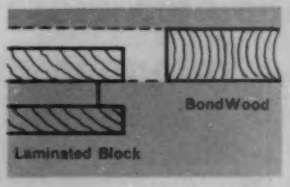
Dept. AR-48 • Berrien Springs, Michigan

REVOLUTIONARY NEW HARDWOOD PARQUET

Illustrated: Harris Eagle Red Oak BondWood with Walnut divider strips and Eagle Walnut insets.

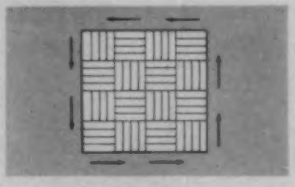
FOR INSTALLATION OVER CONCRETE OR WOOD

Here's the parquet architects are specifying across the country for various types of installations — unlimited design possibilities and a lifetime of wear — found only in HARRIS BondWood. Units are 5/16" x 19" x 19", composed of sixteen 4¾" squares, consisting of square edged slats of solid hardwood. Available in Oak, Walnut, Maple, Cherry, with or without divider strips. Specify HARRIS BondWood for commercial buildings, institutions, apartment houses, hotels, industrial applications and residences. It's revolutionary! See our catalog in Sweets'.



81.8% THICKER

Can be refinished countless times. A full 5/16" of wearing surface — 81.8% thicker than ¼" Laminated Block — BondWood is solid hardwood, no tongue or groove.



DIFFERENT PATTERN

Grain direction changes every 4¾"! The most beautiful parquet you will ever specify. Unique construction plus exclusive adhesive makes for more stability.

HARRIS
Quality Flooring since 1898

BondWood

Harris Manufacturing Co., Dept. AR-48, Johnson City, Tenn.
Please send us your free color brochure and actual photograph of Harris BondWood.

Firm_____

Address_____

City_____ Zone____ State____ By_____

Swiss in origin. Exclusively manufactured in U. S. by Harris Manufacturing Company, Johnson City, Tennessee

Motel builder picks Gold Bond Holostud

ST. PAUL CONSTRUCTION CO.

1440 BEACON STREET
BROOKLINE 46, MASS.
ASPINWALL 7-1750

BERNARD ROBERTS, PRES.
ALFRED L. ROBERTS, V. PRES.
MYRON C. ROBERTS, TREAS.
ROBERT H. ROBERTS, ASST. TREAS.

January 27, 1958

National Gypsum Company
325 Delaware Avenue
Buffalo, New York

Gentlemen:

I would like to take this opportunity to express to you our satisfaction with the Gold Bond "Holostud" partition system that we used in our recently completed Charterhouse Inn motor hotel at Chestnut Hill, Massachusetts. This motor hotel is the first to be completed of a national chain of deluxe motor hotels being constructed for the Hotel Corporation of America.

We investigated all types of partition systems as to sound transmission factors, ease of installation and comparative costs before finally deciding on your "Holostud" partition system. Now that construction is completed, we find that our choice was well made, and that the sound deadening characteristics of this partition are everything that we desired for our motor hotel. Of course, the importance of sound proofing between walls of adjacent rooms was of paramount importance.

We wish to express our appreciation for the full cooperation received from your Boston Sales Office in helping us make our determination.

Sincerely yours,

ST. PAUL CONSTRUCTION COMPANY

Myron C. Roberts

MYRON C. ROBERTS
Treasurer

MCR:tmp

Using the new combination stud shoe and starter clip saves up to 2½ minutes on every stud. Gypsum lath is quickly and firmly attached.

for its "sound-deadening characteristics"

Builder-Owners: St. Paul Construction Co., Brookline, Massachusetts; *Architects:* Arthur G. Manaselian, Boston; *Lathing Contractor:* Charles Genovese, Boston; *Plastering Contractor:* DiGregorio & Cassis, Boston.

Easily-installed partition system also combines versatility and strength with economy

New Charterhouse Inn at Brookline, Massachusetts, is the first of a national chain of motor hotels to be built near major cities. Built and owned by the St. Paul Construction Co., Brookline, this motel has non-load-bearing partitions constructed with the Gold Bond Holostud Wall System.

Mr. Myron C. Roberts, Treasurer of St. Paul Construction, selected 10,000 yards of 2½" Holostuds with clipped-on Gold Bond Gypsum Lath for all corridor and room partitions. This system reduced sound transmission between rooms—an all-important feature in motel construction—to the complete satisfaction of the owners.

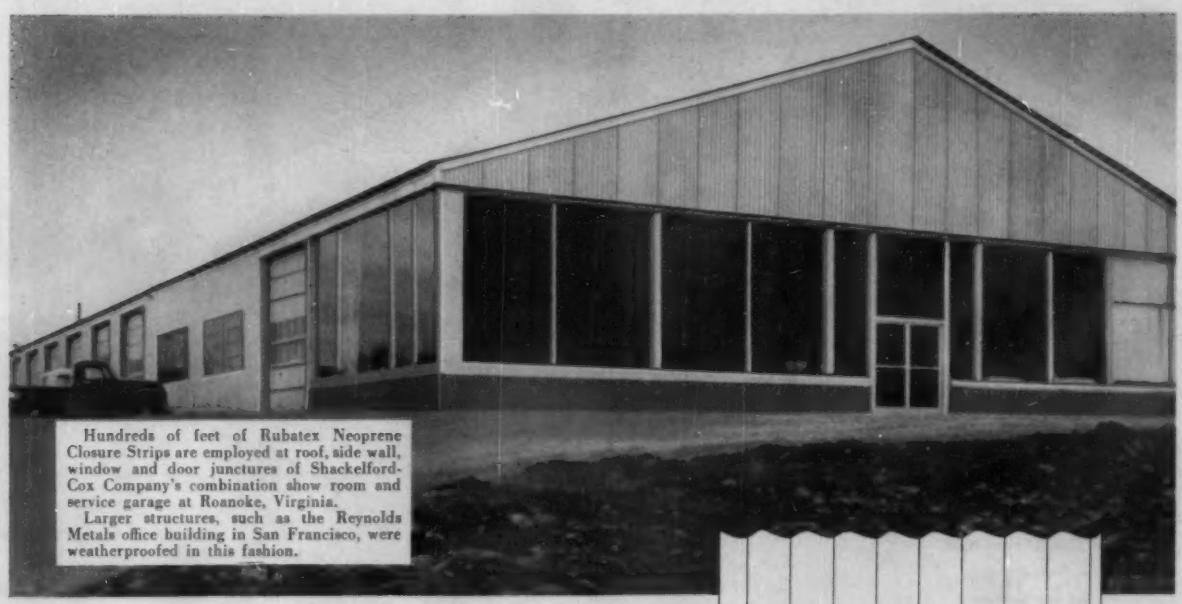
Gold Bond® Holostud Systems are fast to install, saving costly time on every stud erected. Open-strut construction makes routing of horizontal and vertical utilities extremely easy and efficient.

Complete information about Gold Bond's Holostud Wall System, with either Gypsum or Metal Lath, and how to incorporate it in your planning is available. Write: Dept. AR-48, National Gypsum Company, Buffalo 2, New York.

Gold Bond
BUILDING PRODUCTS

NATIONAL GYPSUM COMPANY

Corrugated roofing and siding are now readily weatherproofed during erection with Rubatex Neoprene Closure Strips



Hundreds of feet of Rubatex Neoprene Closure Strips are employed at roof, side wall, window and door junctures of Shackelford-Cox Company's combination show room and service garage at Roanoke, Virginia.

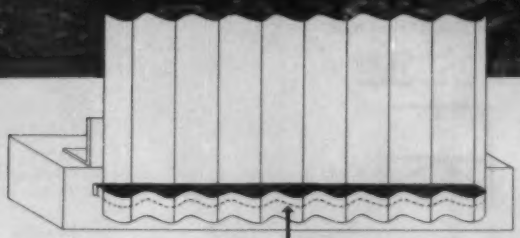
Larger structures, such as the Reynolds Metals office building in San Francisco, were weatherproofed in this fashion.

Fastened at same time as corrugated sheeting—No separate caulking operations necessary

RUBATEX CLOSED CELLULAR NEOPRENE CLOSURE STRIPS are ideally suited for corrugated metal, asbestos, glass or plastic roofing and siding installations.

Preferred by architects for the solid, continuous nature of the neoprene seal—liked by construction men because of its easy, quick installation . . . fastened at same time as corrugated sheeting . . . requiring no separate caulking operations.

RUBATEX's excellent aging and weathering properties, plus its closed cellular structure, guarantee a year-in and year-out weather barrier that's well worth your checking into.



Die-cut to fit corrugations, Rubatex forms a snug, air-, water- and dust-proof seal. It is installed on roofing under aprons of ridge roll, with flashing sections at roof junctions, side walls or end walls. Corrugated siding is sealed at foundation level and with flashing sections above and below windows and doors.

RUBATEX DIVISION, Dept. AR-4
GREAT AMERICAN INDUSTRIES, INC.
Bedford, Virginia

For full details and sample of Rubatex Neoprene Closure Strips — print your name in space below, attach to your company letterhead and mail to us.

Name_____

RUBATEX
NEOPRENE CLOSURE STRIPS

Send for Free Sample and Data Sheets

Foresight is a habit with Curtis . . . Visioneers in planned lighting

Curtis **SKY-LUX** fluorescent luminaires bring out the natural brilliance of displays in the China department, Dayton's Southdale Regional Shopping Center, Minneapolis, Minn. Architect and Engineer: Victor Gruen & Associates.

4' x 4' Surface Mounted **SKY-LUX** With CurtiCell Louver Diffuser

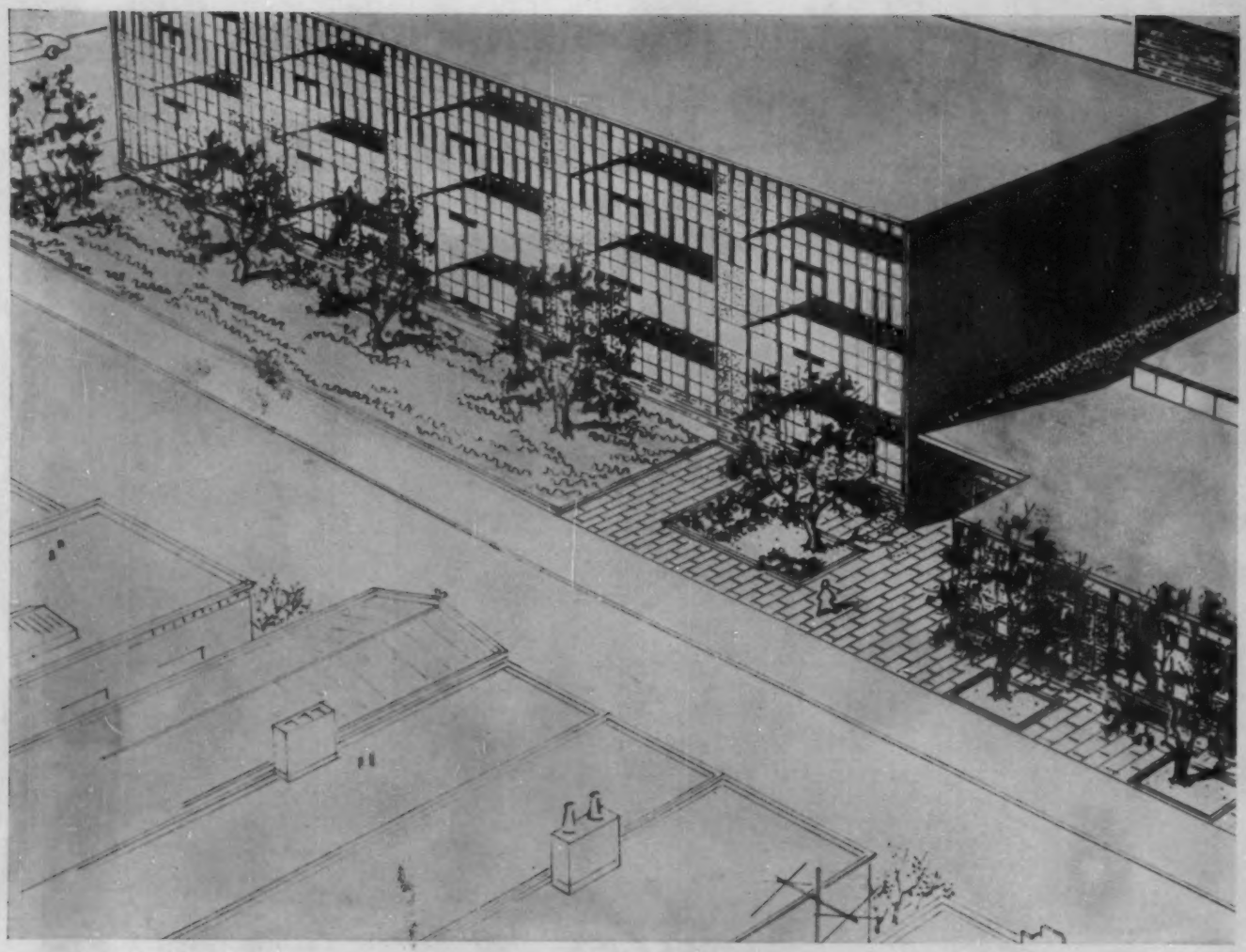
2' x 2' Recessed **SKY-LUX** With Dished Concave Acrylic Diffuser

High-level illumination in modern low-ceiling design achieved with Sky-Lux Luminaires

The evolution in modern building methods challenges the skill, originality and versatility of product manufacturers as well as designers and engineers. Anticipating the trend to low-ceiling structural design in today's commercial interiors, Curtis visioneers meet the demand for large area fluorescent lighting that combines overhead beauty with properly diffused general illumination. Curtis SKY-LUX luminaires complement all the esthetic qualities of modern architectural form . . . provide controlled high-level illumination void of objectionable shadows. Curtis can supply many types of bottom enclosures in many sizes of large area fluorescent luminaires, either recessed or surface mounted. Write today for complete information about Curtis SKY-LUX. Curtis Lighting, Inc., 6135 W. 65th St., Chicago 38, Illinois. In Canada: 195 Wicksteed Ave., Toronto 17, Canada.

CURTIS

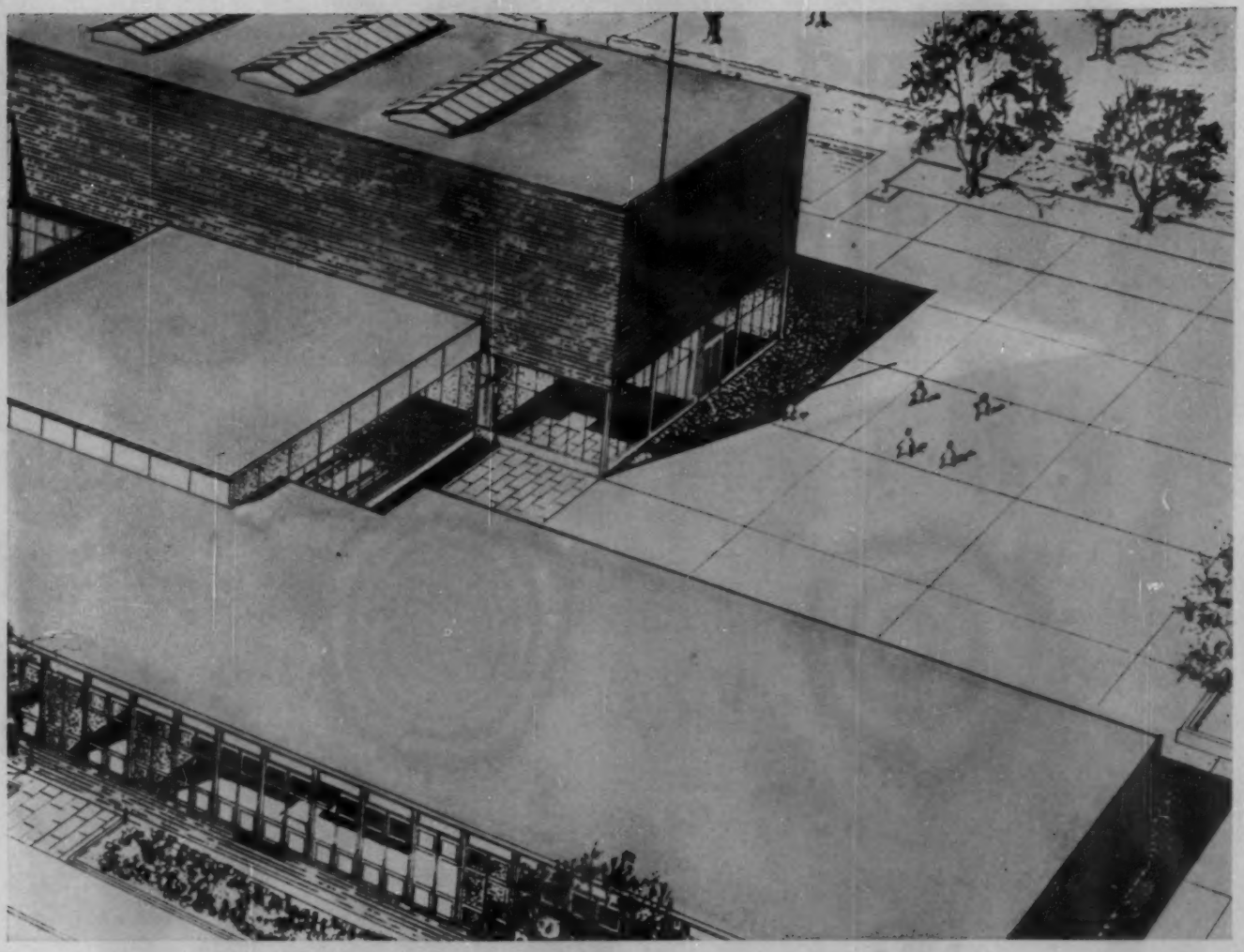
Visioneers in Planned Lighting®



How Cincinnati saved money on

Washington Park Elementary School, Cincinnati, Ohio. Architect: Charles Burchard, Cincinnati, Ohio. Consulting Engineers: A.M. Kinney, Inc., Cincinnati, Ohio. Approximately 1100 units of Type H Lupton Curtain Wall were used in combination with about 6000 feet of mullions. Window units have fixed glass combined with ventilators.

Windows themselves become walls in this new school. Natural lighting is abundant. Ventilation is draft-free, since two types of "Master" projected windows (in and out opening) were selected.



its first curtain wall school

Cincinnati's new, 1000 pupil Washington Park Elementary School rises boldly, with pure purpose, from the heart of the city's downtown district. It's a Lupton aluminum *curtain wall* school—one of many in the country, but the first building in Cincinnati to utilize this modern, low-cost construction system.

Savings for Cincinnati's new school started with installation of these Lupton curtain wall units. As on previous projects, panels were delivered direct to the job site, ready for installation even before the building frame was finished. Moreover, they are installed from the *inside*, without heavy hoists or scaffolding. Since lightweight Lupton curtain walls are about one-third as thick as conventional masonry, there's an extra dividend in usable floor space. In fact, overall weight of the building is considerably reduced, which lowers cost of foundation and framework.

Best of all, savings will continue to accrue for years to come. Every time it rains, the aluminum curtain walls will wash spanking clean. Most spandrels and panels are insulated, to cut fuel costs. As for the "Master" projected windows, they can't rust, and never need painting.

Wouldn't you like to know more about Lupton aluminum curtain wall systems, and how they can save you money? See Sweet's (Sections 3 and 17) for the Michael Flynn Curtain Wall and Metal Window Catalogs, and write to us for further information. For fast action, look up the Lupton representative in your Yellow Pages, under "Windows—Metal."

LUPTON

METAL WINDOWS • CURTAIN WALLS

MICHAEL FLYNN MANUFACTURING COMPANY

Main Office & Plant: 700 E. Godfrey Ave., Philadelphia 24, Pa.

Wind-O-Washer

by

ECONOMY ENGINEERING

The safe, economical way of servicing building exteriors; window-washing, tuck-pointing and building-washing. Every known safety feature provided, assuring protection to workers, building management and owners. Cleaning operations speeded up with attendant lower costs. Each installation specially engineered.

Write E. W. McDonnell

ECONOMY ENGINEERING COMPANY, *Since 1901*
4514 W. Lake St., Chicago 24, Ill.
New York Office: 342 Madison Ave., New York 17, N. Y.

Guide tracks, designed as part of the building exterior, hold platform secure to the building and prevent side sway. The operator has full control of the up and down movement of the scaffold, as well as lateral travel of the roof car. Electrical operation throughout with push-button control on both scaffold and roof car, the latter moving on tracks with turntables at corners, entire unit movable out of sight when not in use.

The new Inland Steel Company Building in Chicago, a 20 story fixed-window structure, equipped with the Economy Wind-O-Washer.

THERE IS NO OTHER

Comfort Conditioning System that performs all these functions so successfully!

The BURGESS-MANNING Radiant Acoustical Ceiling

The Only Completely Integrated Radiant Heating, Cooling and Acoustical Ceiling

The Burgess-Manning Radiant Acoustical Ceiling offers Radiant Heating, Heating and Cooling, or Radiant Cooling only, plus Acoustical Control. It performs all these functions efficiently and economically. Before the introduction of this ceiling there was no practical, economical and efficient method of utilizing Radiant Energy for the comfort conditioning of institutional and commercial buildings.

Since it does not depend on air currents for heating, there are no drafts, room temperatures are uniform and there is no appreciable temperature variation from floor to ceiling. Response to thermostatic controls is virtually instantaneous with no lag or over-run. Floors are always warmer than room temperature. Physical comfort is maintained at lower room temperature. There are no overheated areas or cold spots in the room.

To these functional advantages, add more efficient and economical operation, more useful building space and greater architectural design freedom, plus elimination of radiators which occupy valuable floor space; and you have ample reason to thoroughly investigate the Burgess-Manning Radiant Acoustical Ceiling before planning your building.

Remember

Your Building is Better
Your Building Budget No Bigger

Write for Descriptive
Catalog No. 138-2L

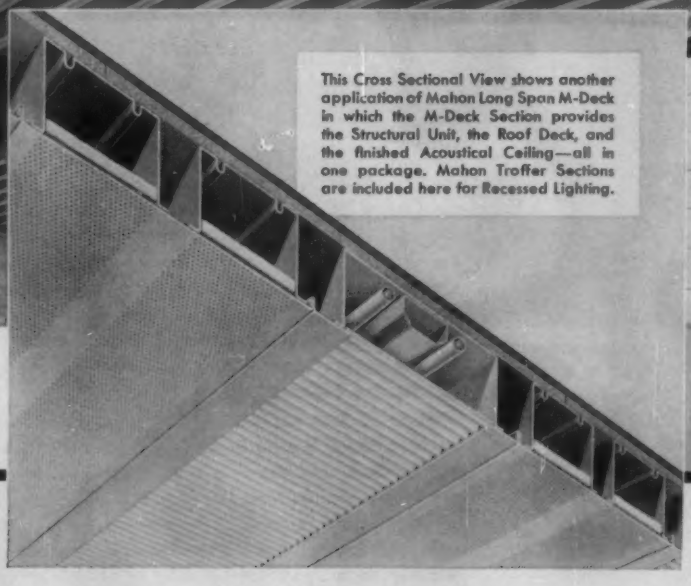
SEE OUR CATALOG IN SWEET'S ARCHITECTURAL FILE OR WRITE FOR COPY

3 Heating Cooling Acoustical

BURGESS-MANNING COMPANY
Architectural Products Division
5970 Northwest Highway, Chicago 31, Ill.

M-DECKS Span from

In a 24 Room Addition to the Reeths-Puffer High School, Muskegon, Michigan, Mahon Long Span M-Deck Section M1-OB was used exclusively for the Roof. A Perforated Metal Acoustical Ceiling was attached directly to the bottom flanges of the Open Beam M-Deck Sections. R. S. Gerganoff Architect. Muskegon Construction Company, General Contractors.

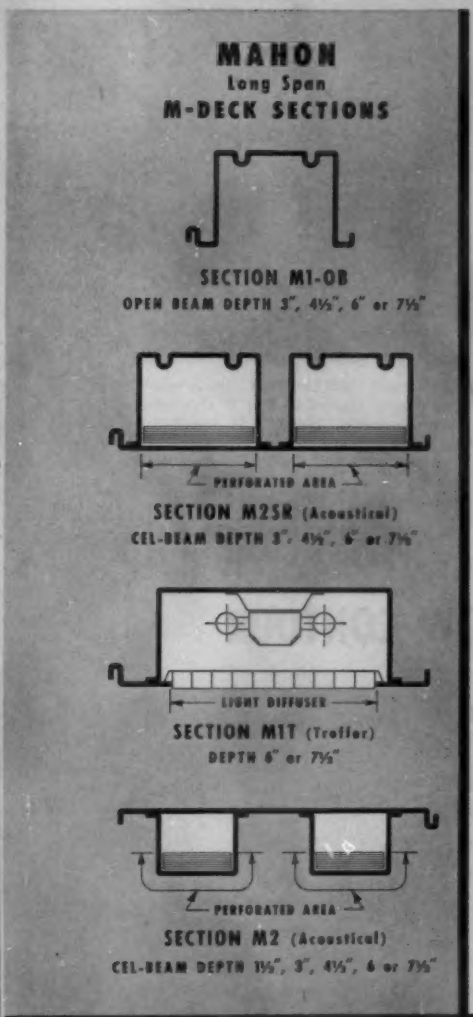


This Cross Sectional View shows another application of Mahon Long Span M-Deck in which the M-Deck Section provides the Structural Unit, the Roof Deck, and the finished Acoustical Ceiling—all in one package. Mahon Troffer Sections are included here for Recessed Lighting.

Serving the Construction Industry Through Fabrication of Structural Steel, Steel Plate Components, and Building Products

Wall to Wall or from Truss to Truss . . . Eliminate Roof Beams and Purlins!

A Mahon Product with Broad Application in Roof and Combined Roof-Ceiling Construction



☆ OTHER MAHON BUILDING PRODUCTS and SERVICES:

- M-Floors (Electrified Cellular Steel Sub-Floors)
- Insulated Metal Curtain Walls
- Underwriters' Rated Metalclad Fire Walls
- Rolling Steel Doors (Standard or Underwriters' Labeled)
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☆ *For INFORMATION See SWEET'S FILES or Write for Catalogues*

of Steel and Aluminum

THE R. C. MAHON COMPANY • Detroit 34, Michigan
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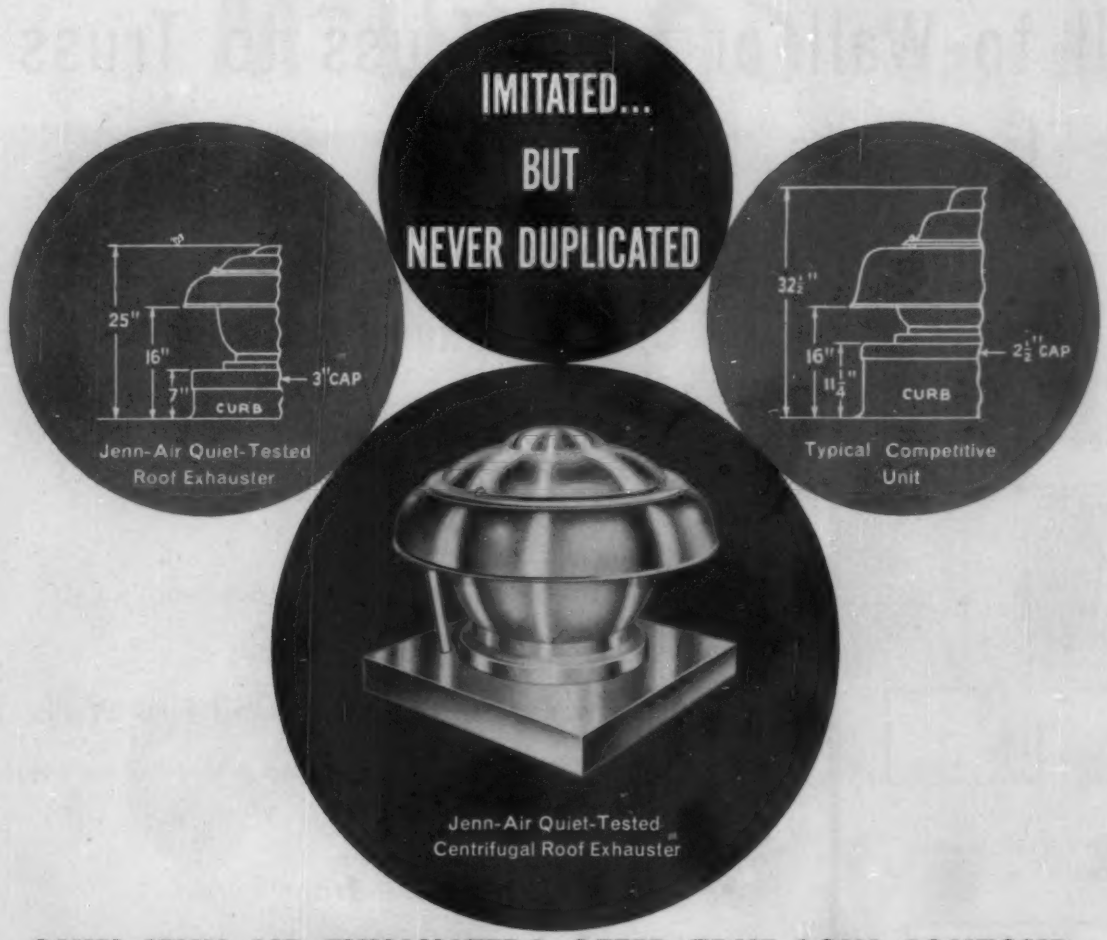


ONLY JENN-AIR EXHAUSTERS OFFER TRUE LOW CONTOUR

The Big Difference is in the Installed Height

To conform with modern construction, low contour in exhausters is the accepted design among architects, engineers and building owners. And Jenn-Air, first to develop low contour spun aluminum exhausters, still engineers the lowest contour of all. Only true measurement of exhauster height is the distance from the roof level to the top of the exhauster. Jenn-Air Quiet-Tested units, when installed, stand 25 to 50% lower than others—yet meet specifications for a discharge height at least 16″ above roof level. This is achieved by Jenn-Air's exclusive method of nesting the motor below the discharge of the exhauster. Thus, the base of the exhauster itself supplies the additional height. In competitive models, with a discharge height of only 9½″, the curb base must be extended higher to attain the 16″ position. Result: overall, installed height of competitive so-called "low contour" exhausters runs 8″ to 10″ more than that of Jenn-Air. Have a Jenn-Air representative show you the "yard-stick test" . . . proof positive that only Jenn-Air Quiet-Tested exhausters offer *true* low contour.

JENN-AIR PRODUCTS COMPANY, INC.
1102 Stadium Drive, Indianapolis 7, Indiana

"Glare-less" Lighting with Mercury Uplight Units
Abolite's 24" wide Alzak aluminum uplight fixtures used with H 400-RC1 mercury lamps. Ceiling height is 35'; fixture height, 27' 10", with 20' spacing. 90% of lamp's lumens are useful. Average footcandle level is 35.

Now Abolite brings "office type" eye comfort to...

INDUSTRIAL HIGH BAY LIGHTING

Abolite open-top units direct only a small amount of light (18%) upward, but it makes a big difference in eye comfort. Dark ceiling shadows are washed away—there's no sharp contrast of bright light against black background. And glare is reduced still more by 35° lamp shielding. As a result, eye fatigue is reduced—workers are more efficient.

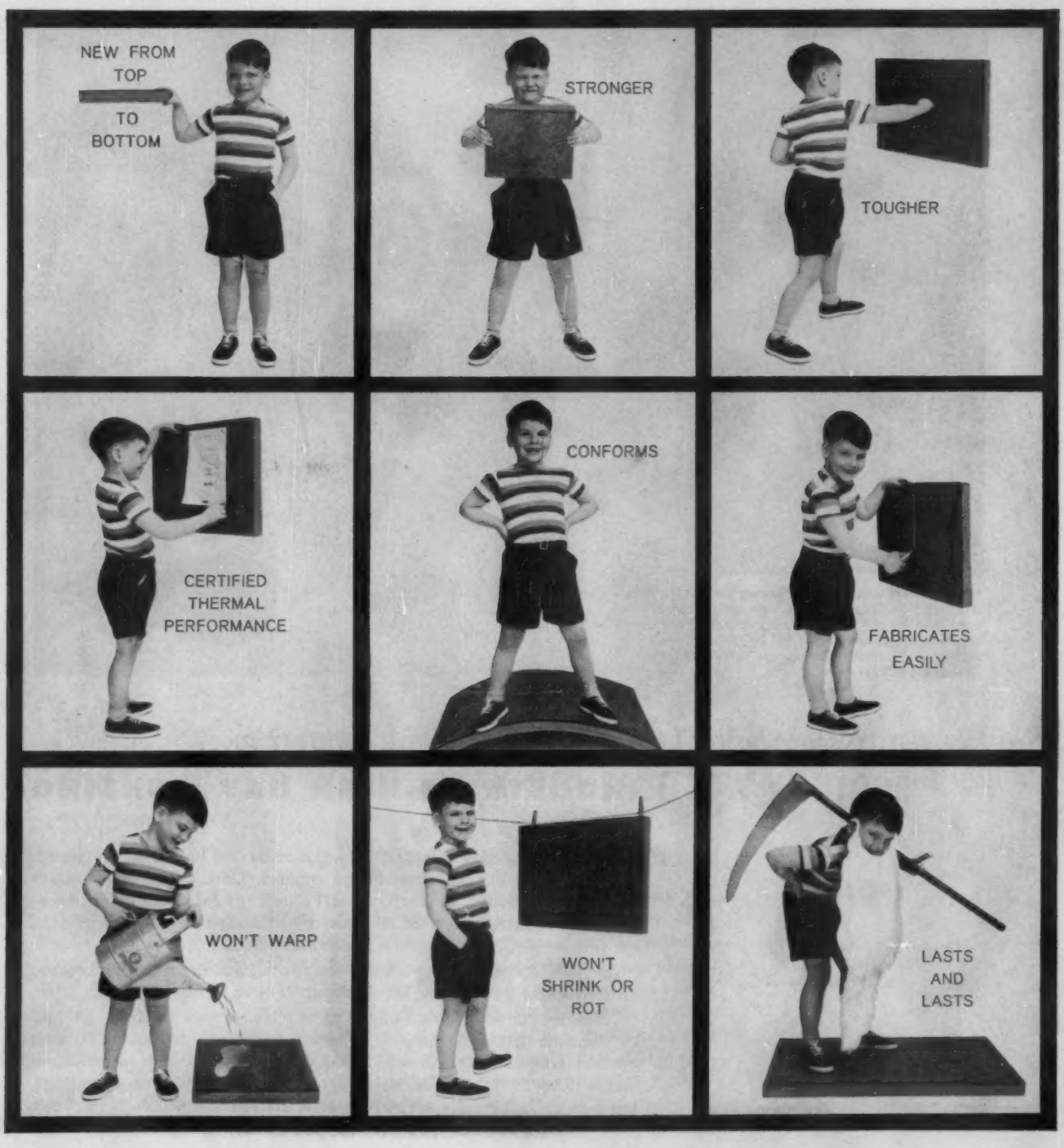
Abolite's modern air-swept design also reduces maintenance costs because air circulating through the fixture sweeps it clean of dulling dust.

There are three Abolite uplight units for high bay lighting: 18" and 24" diameter Alzak aluminum fixtures for use with 400 and 1000 watt mercury lamps and 18" Alzak aluminum fixtures for 500 watt incandescent lamps (ideal for gymnasium lighting). For full information on these units, see Sweet's Industrial Construction File, 12i/AB.

ABOLITE Lighting

THE JONES METAL PRODUCTS COMPANY
West Lafayette, Ohio

NEW IMPROVED FIBERGLAS ROOF INSULATION



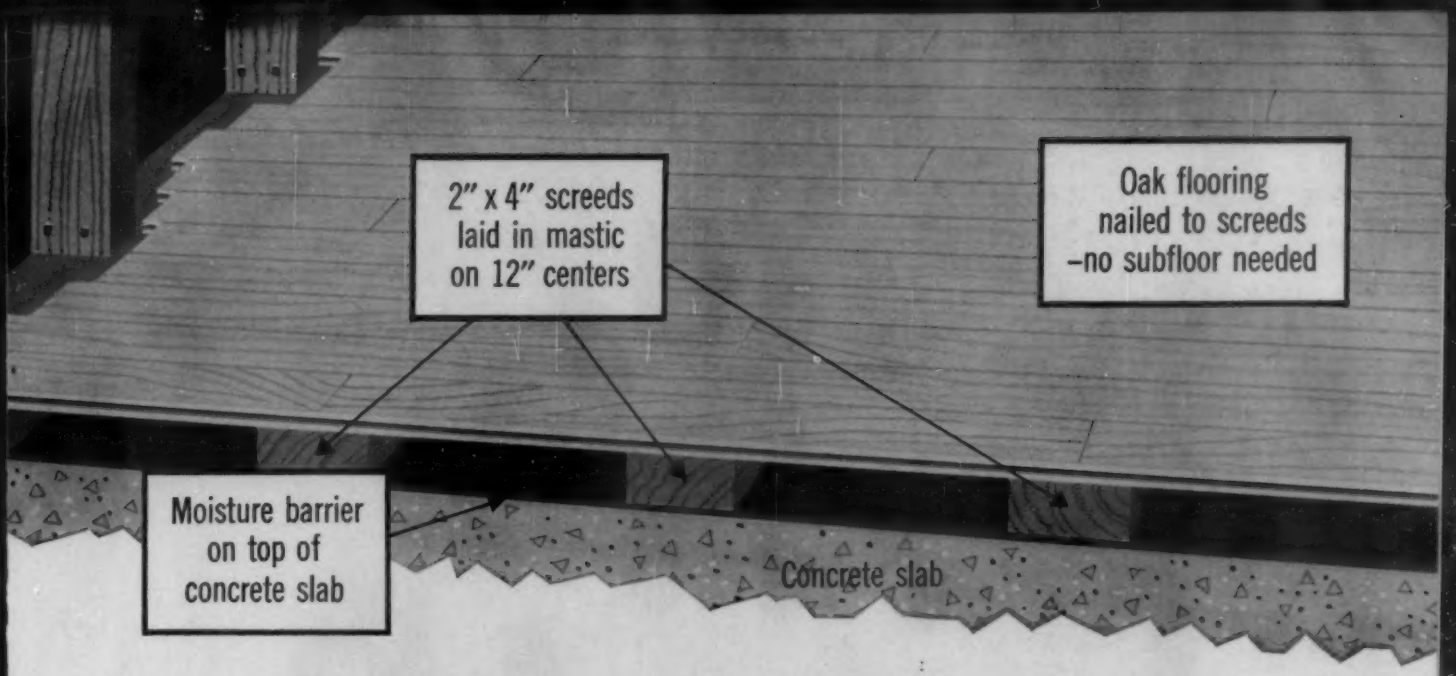
In no other roof insulation will you find this remarkable combination of desirable properties.

Specify Fiberglas* Roof Insulation—job-proven on thousands of roofs all over America!

See our catalog in Sweet's—or write for new literature on Fiberglas Roof Insulation and Fiberglas Built-Up Roofing. Owens-Corning Fiberglas Corporation, Dept. 68-D, Toledo 1, Ohio.

OWENS-CORNING FIBERGLAS

*T.M. (Reg. U.S. Pat. Off.) O-C.F. Corp.


2" x 4" screeds laid in mastic on 12" centers
Oak flooring nailed to screeds –no subfloor needed
Moisture barrier on top of concrete slab
Concrete slab

New low-cost way to use Strip Oak Floors over concrete

Random-length screeds are laid in a staggered pattern. The asphalt mastic anchors them permanently to the slab. Flooring is nailed to screeds and sanding and finishing follow in usual manner. Prefinished flooring may be used.

Proven successful in thousands of homes

If you design homes with concrete slab foundations here's a new construction method you can use to advantage.

Strip Oak Floors, preferred by 85% of all home buyers, are easily installed over concrete by providing a nailing surface of wood screeds laid in mastic. No subfloor is needed. The method is simple, economical and fully approved by building codes and lending agencies.

It produces a finished floor that is sound and trouble-free, with all the beauty and durability of Oak. And over concrete slabs, Strip Oak Floors have the additional advantages of high insulating value and natural resilience which increase comfort.

The "screeds-in-mastic" method is described with step-by-step instructions and photographs in an installation manual prepared by the National Oak Flooring Manufacturers' Association. Mail the coupon below for your free copy.

NOFMA OAK FLOORS

NATIONAL OAK FLOORING MANUFACTURERS' ASSOCIATION
Sterick Building • Memphis 3, Tenn.

MAIL COUPON
for free installation manual

NATIONAL OAK FLOORING
MANUFACTURERS' ASSOCIATION
820 STERICK BLDG., MEMPHIS 3, TENN.

Please send free copy of your manual, "How To Install Hardwood Strip Floors Over Concrete Slabs."

Name_____

Address_____

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FOUND:

extra office space . . .

The building in the picture—owned by the International Union of Operating Engineers—is enclosed in porcelain-enameled steel curtain wall panels, highlighted with Stainless Steel mullions. The window frames are made from Stainless Steel, too.

The curtain wall is thin—so thin that the building designers picked up an extra 6.8% in floor area—compared to conventional wall construction that would be 8″ to 12″ thick at the minimum.

Steel curtain wall panels can be made in just about any color, any texture, any size or shape. The colors are permanent . . . made from high-temperature enameling frits that are time-tested for durability.

Steel curtain wall panels are light, but strong. Due to their lightness, they often reduce the building's structural requirements. They are strong enough to resist denting during erection —and they retain strength even at high temperatures, which is important in case of fire.

Curtain walls of steel cannot be equaled by any other building method for their combination of eye-stopping beauty, durability, low maintenance and low cost.

Credits: National Headquarters Building, International Union of Operating Engineers, Wash., D. C.; Architects: Holabird & Root & Burgee, Chicago; Panel Fabricator: Ingram-Richardson Mfg. Co., Beaver Falls, Pa.; General Contractor: George Hyman Construction Co., Wash., D. C.

USS **United States Steel**

subliminal* selling at its best

This attractive young lady is not the type that usually tries to spruce up her husband. But right now she's doing a great selling job because that's the most attractive suit she's ever seen. In fact, everything in the windows of Moore's new San Francisco store looks especially "buyable." The secret, of course, is in the lighting. Moore's uses display window ceilings of Honeylite to diffuse a soft, even, completely shadow-free light that makes window shopping a pleasure—buying a must. The outstandingly low surface brightness of Honeylite displays merchandise in its finest light—and it is subliminal* (below the threshold of consciousness). ■ Robert Israel, Moore's general manager in San Francisco, appreciates that modern lighting is a part of modern building and merchandising. That's why he chose Honeylite...light-diffusing aluminum honeycomb by Hexcel. ■ For prices and design information on Honeylite see your nearest lighting distributor or write Hexcel Products Inc., 2741 9th Street, Berkeley 10, California.

HONEYLITE®
Modern lighting by Hexcel Products Inc.

COMPLEX EXTRUDED SHAPES DISTINGUISH THIS

ALUMINUM CURTAIN WALL BY

CUPPLES

CITY HALL—CIVIC CENTER,
NEW ORLEANS, LOUISIANA
Architects:
Goldstein, Parham, Labouisse; Favrot, Reed, Mathes, Bergman
General Contractor:
R. P. Farnsworth & Co., Inc.

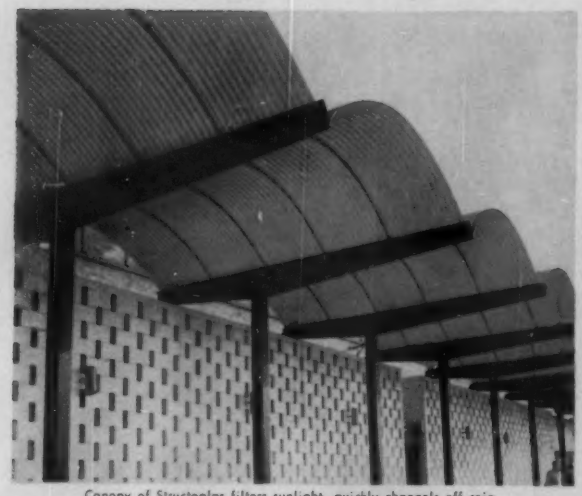
This custom-designed horizontal curtain wall system incorporates both double and triple-hung windows, aluminum panel frames and Solex glass panels.

Other aluminum details by Cupples include: hand railing at stairs and balcony; doors; flag pole brackets; vertical hollow solar shades; fascia; miscellaneous trim; stools for balcony, stairwells and ninth floor; louver frames for parking garage—all in alumilite finish.

Whether the curtain wall design is simple or complex, Cupples has the experience and the facilities to meet your requirements without variation. Cupples, also, is a foremost manufacturer of aluminum windows, doors, Alumi-Coustic grid systems and special ornamental products. Our catalogs are filed in Sweet's.

Cupples PRODUCTS CORPORATION

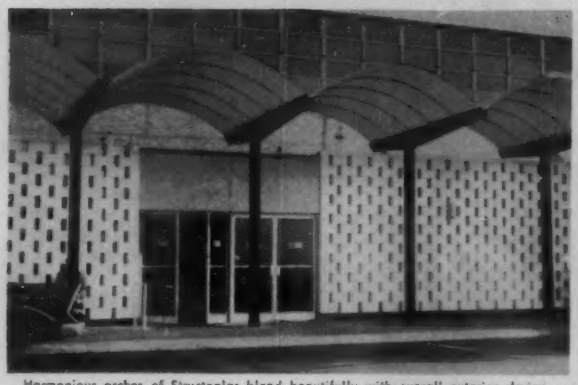
2658 South Hanley Road • St. Louis 17, Missouri



Canopy of Structoglas filters sunlight, quickly channels off rain.

ARCHITECT: YAMASAKI, LEINWEBER & ASSOCIATES

CANOPY OF LIGHT



Harmonious arches of Structoglas blend beautifully with overall exterior design.

MADE WITH

structoglas®

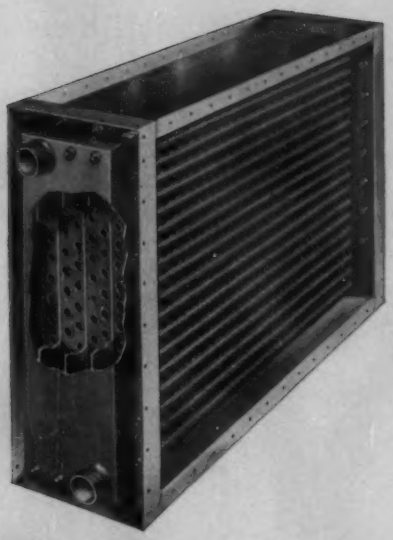
REINFORCED PLASTIC PANELS

Yamasaki, Leinweber & Associates had good reasons for choosing Structoglas to form a canopy over Willow Run Air Terminal's new facade: The shatterproof, corrugated plastic panels protect customers from weather, and sunlight the year around. And Structoglas needs practically no maintenance. It's press-molded from an erosion-resistant, color fast acrylic-modified resin. Corrugations are uniform, match exactly. Pebble-grain surface sheds dirt with the rain.

Need a beautiful idea? Let the best of the outdoors come in—through Structoglas.

5806

WRITE TODAY for detailed Willow Run, Firestone, & Rockwell Case Histories, Structoglas catalog, specs and samples. STRUCTOGLAS DIVISION, International Molded Plastics, Inc. Dept. AR4, Cleveland 9, Ohio.



AEROFIN TYPE R REMOVABLE HEADER WATER COILS

- **Complete Drainability**
- **Easily Cleaned**
- **High Heat Transfer**

Completely drainable and easily cleaned, Aerofin Type "R" coils are specially designed for installations where frequent mechanical cleaning of the inside of the tubes is required.

The use of ⅝" O.D. tubes permits the coil to drain completely through the water and drain connections and, in installations where sediment is a problem, the coil can be pitched in either direction. The simple removal of a single gasketed plate at each end of the coil exposes every tube, and makes thorough cleaning possible from either end.

The finned tubes are staggered in the direction of air flow, resulting in maximum heat transfer. Casings are standardized for easy installation. *Write for Bulletin No. R-50.*

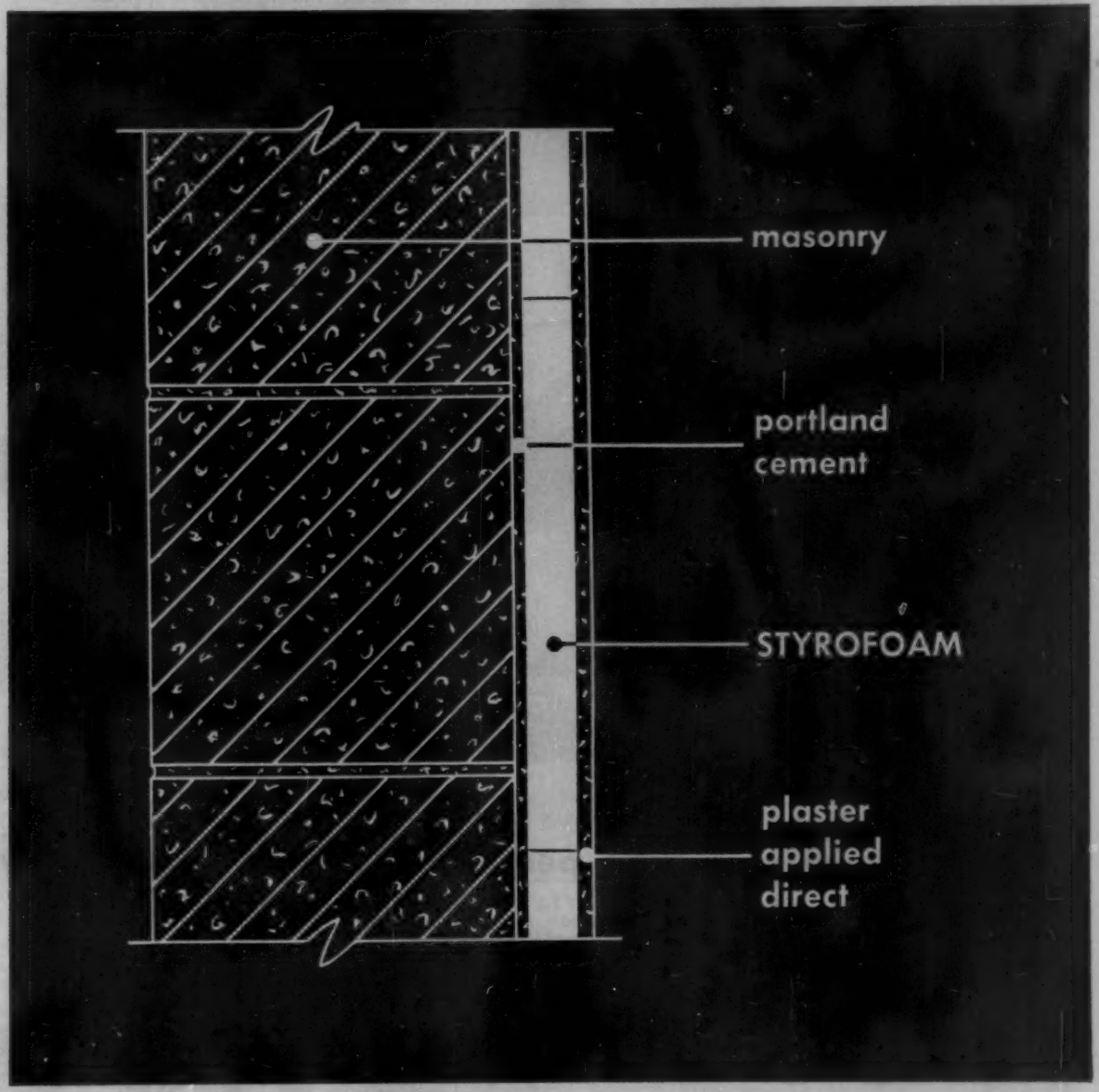
AEROFIN CORPORATION

101 Greenway Ave., Syracuse 3, N.Y.

Aerofin is sold only by manufacturers of fan system apparatus. List on request.

masonry-insulation-plaster

new method of using Styrofoam substantially reduces costs in commercial and residential construction. Next 3 pages tell how.



STYROFOAM®

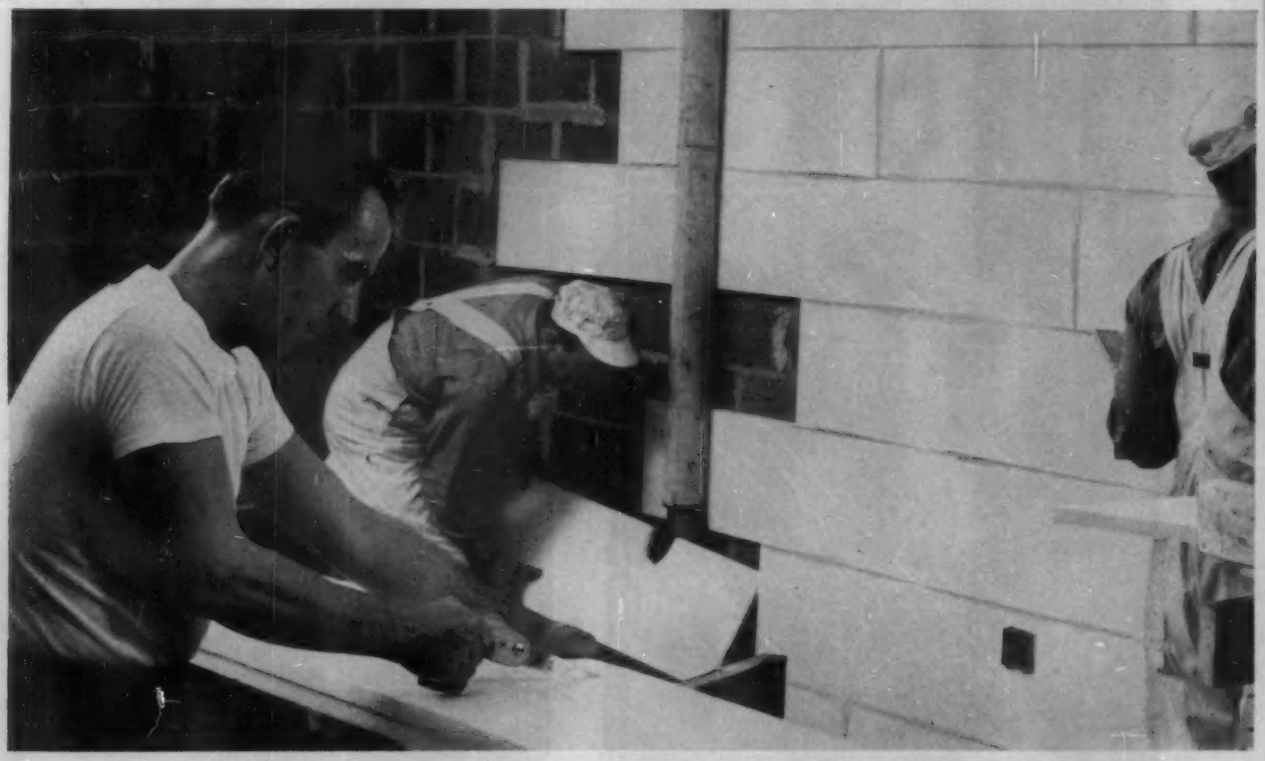
the lifetime plastic foam insulation

DOW

New insulation-plaster base

The new insulation-plaster base method is catching on fast in commercial as well as residential construction. With this method, a fully insulated masonry structure can be built for about the same cost as an identical frame siding structure!

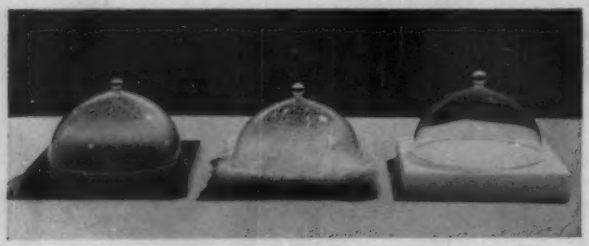
The principle of the new method is simple: A masonry wall is erected in the usual manner. Next, Styrofoam* is adhered to the wall with a thin layer of cement mortar. Plaster is then applied directly over the Styrofoam. The noninterconnecting cells



Styrofoam® offers proved, permanent, insulating efficiency

A permanent low thermal conductivity and unyielding resistance to water and water vapor combine to give Styrofoam lifetime insulating efficiency. Its lightness, new large sizes and rigidity permit remarkable ease of handling, cutting and applying. Other outstanding properties, such as high compressive strength and resistance to attack by rot and mold help make up the unmatched combination of advantages that are exclusive with Styrofoam. (See complete list of Styrofoam sizes, properties and insulation values at right.)

Styrofoam has been tested and proved by more than a decade of commercial use. A Michigan cold storage plant with a twelve-year-old installation has yet to spend its first maintenance dollar on Styrofoam. Thousands of similar installations in plants, warehouses, schools, churches and homes have proved that Styrofoam costs the least per year of service of any insulation.



Moisture doesn't penetrate. In this moisture-absorption demonstration, Styrofoam and two other commonly used insulations are being tested. Water is heated directly under the test sample. The vapor produced must pass *through* the test sample in order to reach the inside of the glass bell. Note that the bell over the test sample of Styrofoam is clear although the other two bells are filled with condensation.

Even after hours of continuous testing, *there is no evidence of moisture penetrating the sample of Styrofoam!*

eliminates framing, lathing

on the surface of Styrofoam make an excellent base for plaster, but do not allow passage of moisture. The finished wall is strong, sound and unusually well insulated.

The insulation-plaster base method reduces labor and material costs because neither studs nor lath are needed. And mortgage loan commitments have been increased on homes in which this method is used. Specific cost figures derived from actual use in residential construction are available on request.

Easy to install. Handsaws and other common tools readily cut a board of Styrofoam sharp and clean. Or, Styrofoam can be scored with a jackknife and snapped off to any desired size. Easy to apply to any masonry surface with Portland cement mortar or other recommended adhesives.

*STYROFOAM is a registered trademark of The Dow Chemical Company

PROPERTIES OF STYROFOAM

Styrofoam is available in two standard formulations: Styrofoam 22 and Styrofoam 33 (self-extinguishing, and two special high-density forms.

WIDE RANGE OF SIZES

length (ft.)			3	8	9
width (in.)			12	16	24
thickness (in.)	1	1½	2	3	4

Note: Styrofoam is available in boards with any combination of above dimensions.

LOW "K" FACTOR

Styrofoam has a thermal conductivity ("K" factor) of 0.23—0.27 B.T.U.-in./sq. ft.-hr.-°F. at a mean temperature of 40°F.

SUPERIOR RESISTANCE TO WATER

Water absorption is less than 0.03% by volume when subjected to 90% relative humidity at 90°F. for 15 days.

SUPERIOR RESISTANCE TO WATER VAPOR

When Styrofoam acts as a barrier between spaces, the rate of water vapor transmission is only 1.0-2.0 grains/hour/sq. ft./inch of thickness/inch of mercury vapor pressure.

HIGH COMPRESSIVE STRENGTH

Average of 3,000 lbs./sq. ft. Concrete floors can be poured directly over Styrofoam without additional reinforcement.

OTHER PROPERTIES

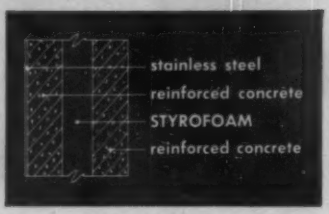
Specific heat	Styrofoam 22 0.27 B.T.U./lb./°F. at 40°F.	Styrofoam 33 0.27 B.T.U./lb./°F. at 40°F.
Resistance to heat (maximum recommended temperature for continuous use.)	170°F.	160°F.
Capillarity	None	None
Water absorption	Less than 0.15 lb. /sq. ft. of area**	Less than 0.15 lb. /sq. ft. of area**
Density	1.6-2.0 lb./cu. ft.	1.7-2.3 lb./cu. ft.
Strength properties (in p.s.i.)		
Compressive yield strength	16-32	16-38
Tensile strength	45-61	65-95
Shear strength	27-36	30-40
Flexural strength	42-61	48-99
Compressive modulus	1200-1700	1500-2000
Bending modulus	1000-1285	1250-1760
Modulus of rigidity	700-1600	1000-1300

COMPARATIVE (U) VALUES

Wall Type	Wall Thickness	Plain Wall	Furred, Lathed & Plastered Wall	1" Styrofoam Wall***
Brick (4" face, Rest common)	8"	.50	.30	.158
	12"	.36	.24	.139
	16"	.28	.20	.123
Concrete	6"	.79	.39	.180
	8"	.70	.36	.175
	10"	.63	.34	.170
	12"	.57	.33	.166
Concrete Block	8"	.56	.32	.164
	12"	.49	.30	.158
Cinder Block	8"	.41	.27	.146
	12"	.38	.25	.142

**Water pick-up on surface cells only
***1" thick Styrofoam with plaster direct—no furring or lathing

Panels are hoisted into position from street level and secured to the steel skeleton. The 13' x 5' panels are faced with stainless steel and contain Styrofoam, the insulation with lifetime insulating efficiency. Architects-Engineers: Skidmore, Owings & Merrill.



Styrofoam® selected for panels of new Inland Steel Building

A newcomer with a shiny face has taken its place in Chicago's bustling loop. It's the 19-story Inland Steel Building and it utilizes the most modern materials in its starkly simple design.

Supplementing the office building is a 25-story service tower which houses restrooms, lounges, elevators, stairways, heating and air-conditioning equipment and other services. The tower is a structural steel skeleton covered by 13' x 5' fully insulated panels.

The panels consist of two 1¾" slabs of reinforced concrete and 1½" of Styrofoam* with a 1/16" stainless steel facing on the exterior side. The inside concrete surface can be finished if desired. These panels provide a strong curtain wall that can be erected quickly and economically and will require practically no maintenance.

The use of Styrofoam insures permanent insulation. Reasons: Millions of tiny, independent dead air cells provide excellent insulating efficiency. Styrofoam has unyielding resistance to moisture, will not rot, mold, deteriorate or "shake down".

Also, Styrofoam is lightweight, clean and easy to handle. It adds little weight in the construction of curtain wall panels. For more information about Styrofoam, write to us today. THE DOW CHEMICAL COMPANY, Midland, Michigan, Plastics Sales Dept. 1927G.

*STYROFOAM is a registered trademark of The Dow Chemical Company

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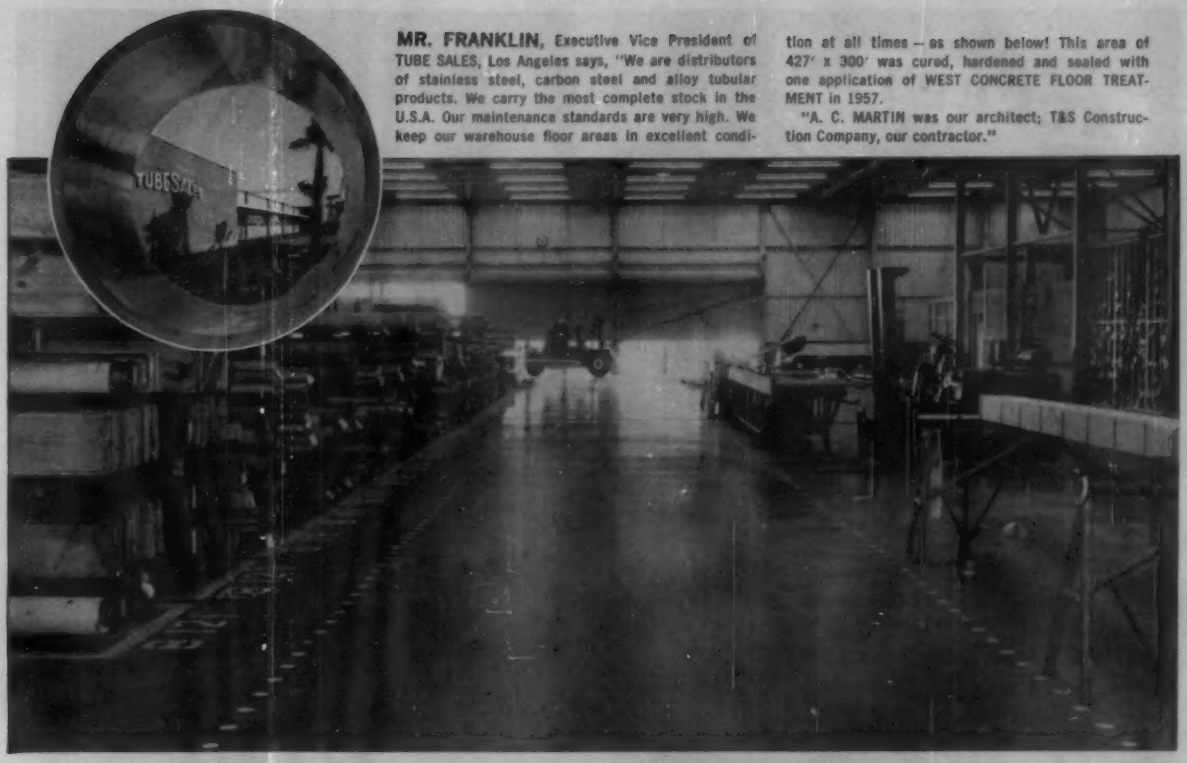

MR. FRANKLIN, Executive Vice President of TUBE SALES, Los Angeles says, "We are distributors of stainless steel, carbon steel and alloy tubular products. We carry the most complete stock in the U.S.A. Our maintenance standards are very high. We keep our warehouse floor areas in excellent condition at all times – as shown below! This area of 427′ x 300′ was cured, hardened and sealed with one application of WEST CONCRETE FLOOR TREATMENT in 1957.

"A. C. MARTIN was our architect; T&S Construction Company, our contractor."

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WEST Concrete Floor Treatment is a proven time-saving, labor-saving product that 1) Cures 2) Hardens 3) Seals newly-laid concrete surfaces with *one* application. It is a rubber based formulation with a quick drying solvent. Formerly as many as three separate products and applications were needed to obtain the same results.

WEST Concrete Floor Treatment can be applied immediately after horizontal surfaces have been troweled or as soon as the concrete can be walked on. Usually in *one* to *eight* hours. It is applied quickly and easily with a lamb's wool applicator or standard hand pump sprayer. All the labor formerly required for cleaning the concrete surface after delayed concrete drying, and between the use of as many as three separate products and applications is eliminated.

WEST Concrete Floor Treatment is applied immediately after troweling. Its fast drying permits subsequent building operations to be speeded. It also dustproofs as it seals. This speeds the final cleaning. All foreign matter is easily flushed off the surface.

WEST Concrete Floor Treatment enables newly-laid, wet concrete to retain 95% of its moisture. This permits it to cure and harden while sealing the surface against acids, oils, greases and other foreign matter. This incongruous aspect of holding back most of the moisture while permitting some moisture to escape slowly is the key to this product's amazing success.

WEST Concrete Floor Treatment is colorless and will not alter the color of the poured mix. It goes on evenly and spreads quickly without streaks. One gallon covers from 300-350 sq. ft.

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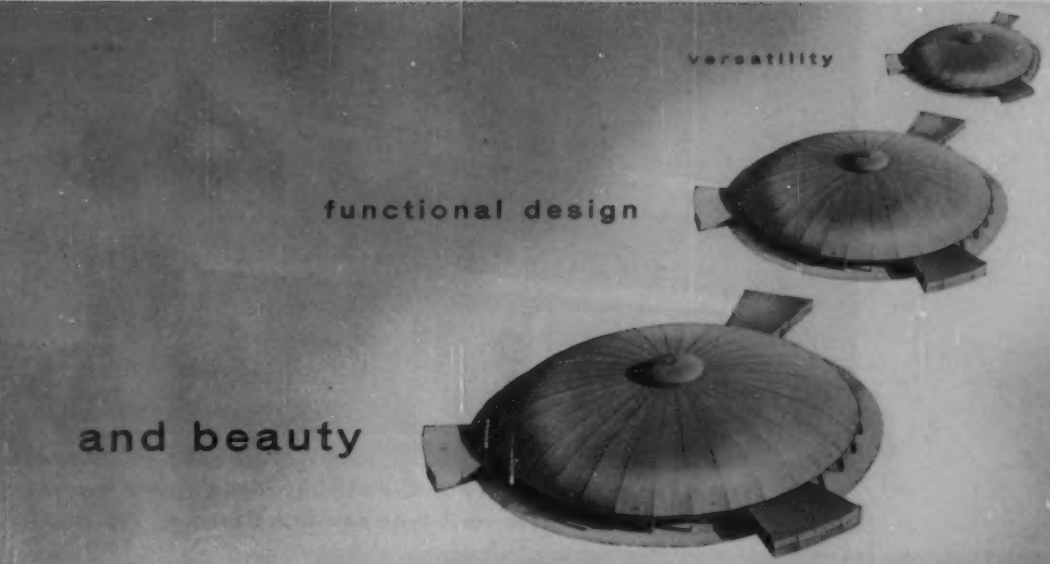

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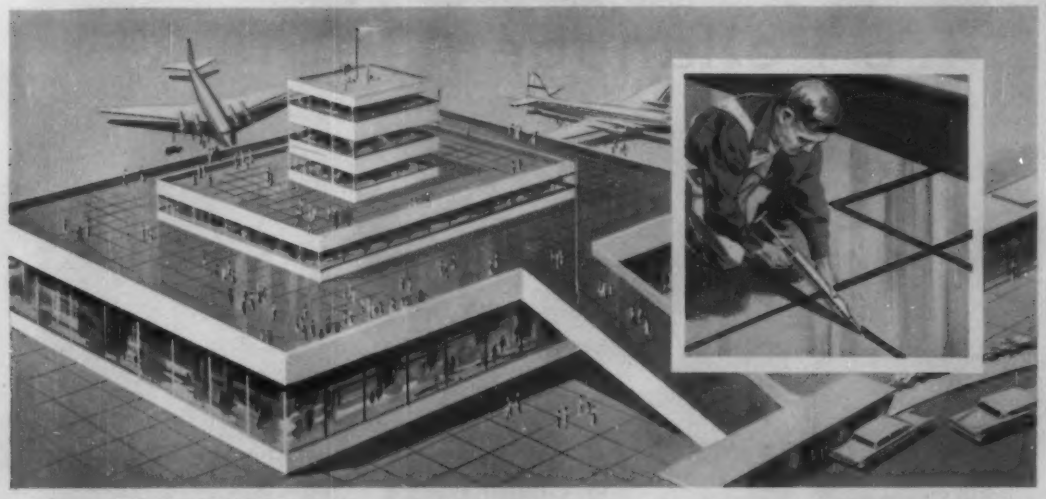

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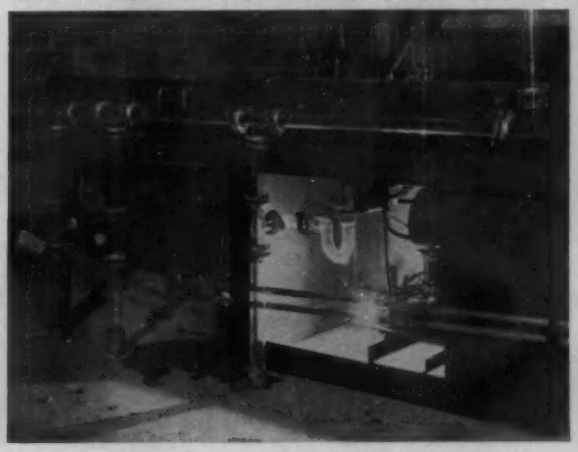

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ARCHITECTURAL RECORD
APRIL 1958

Splendor in the Factory

The Stuart Company, Pasadena, California

Edward D. Stone, Architect

Thomas D. Church and Associates, Landscape Architect

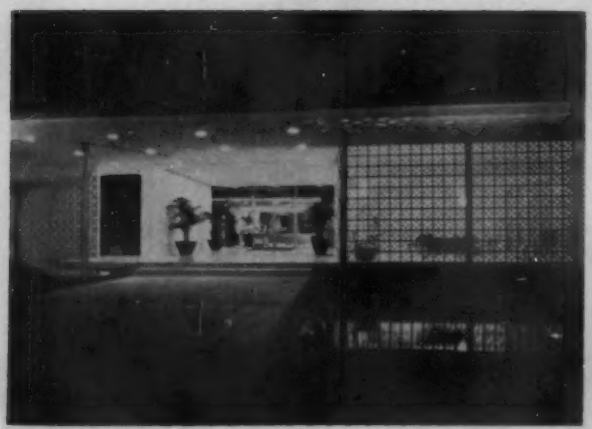
Maurice Sands, Interior Designer

Hall, Pregnoff & Matheu, Structural Engineers

Stockly & Bamford, Mechanical Engineers

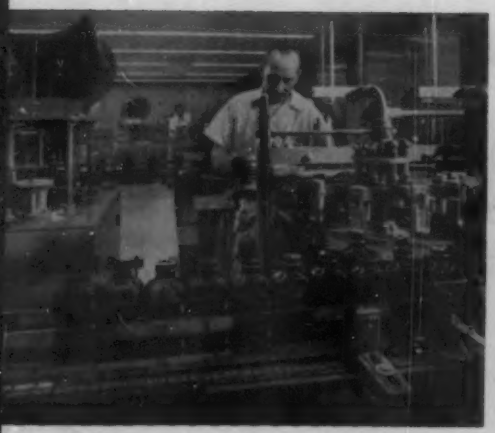
Myers Brothers, Brummett & Demblon, Contractors

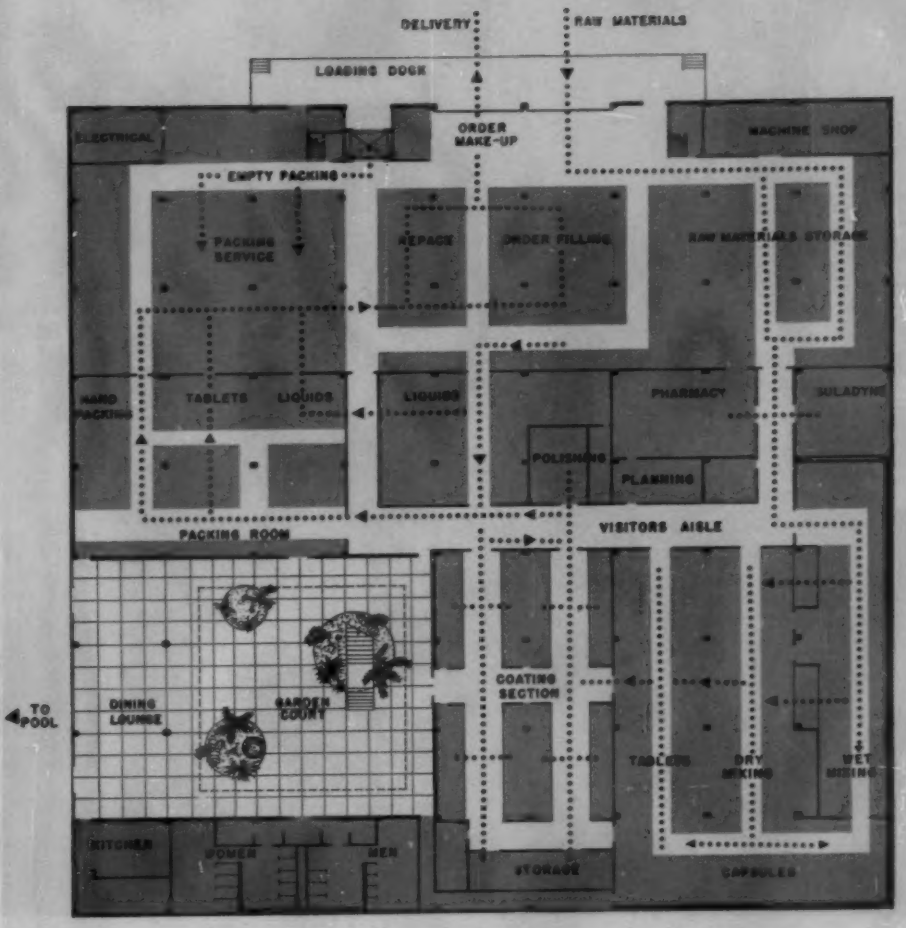
Julius Shulman photos (including preceding page)



The Stuart Company, Pasadena, California

Edward D. Stone has applied his hand to another field—factory design—with noteworthy results. This entire pharmaceutical plant and office has an atmosphere of clean, bright, lush splendor. It is also highly efficient; the company predicts considerable annual savings in operational costs. Perhaps it is needless to point out that the upsurge in employe morale has been remarkable (their central "atrium" for lounge, coffee breaks and dining is shown above). The building is one story in front, two in back, utilizing a drop in the site. The façade is long (400 ft), low, and punctuated by a gilt colonnade with metal decorations inspired by Brancusi's sculptured bases. About half the length is sheltered guest parking, ranged with skylighted gold saucer-gardens (left). The building is cantilevered over a black-bottomed pool dotted with planted "islands" and lighted fountain jets. Gold knobs stud the masonry grill, steel strengthened for earthquakes.

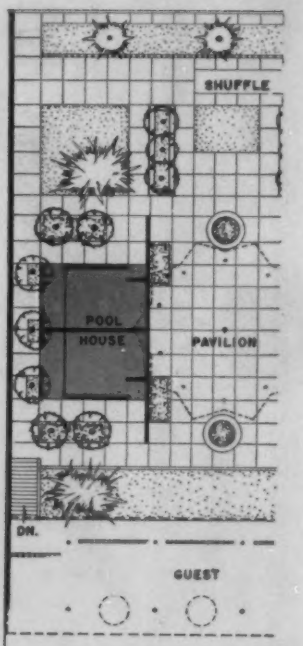




FIRST FLOOR

The Stuart Company

The manufacturing area is on the lower level, and centers on the garden court or atrium. The production line (see plan above) was worked out with the company staff and follows a roughly circular pattern, from raw material entrance to delivery of orders. Aside from the atrium, the building is a sort of loft construction, with steel columns and beams, reinforced concrete floor slabs. The columns are on pads for earthquake protection. Manufacturing rooms generally have plaster walls (with occasional metal splash panels) and vinyl asbestos tile floors; liquids rooms have skidproof floorings. All is done in blue, white (the company's colors), and yellow. There are flush fluorescent fixtures throughout. The heating system uses gas-oil-burner units capable of producing 17,490 pounds of low pressure steam per hour; the steam is used for processing and converted to hot water for heating. Chilled water is supplied for air conditioning and dehumidification.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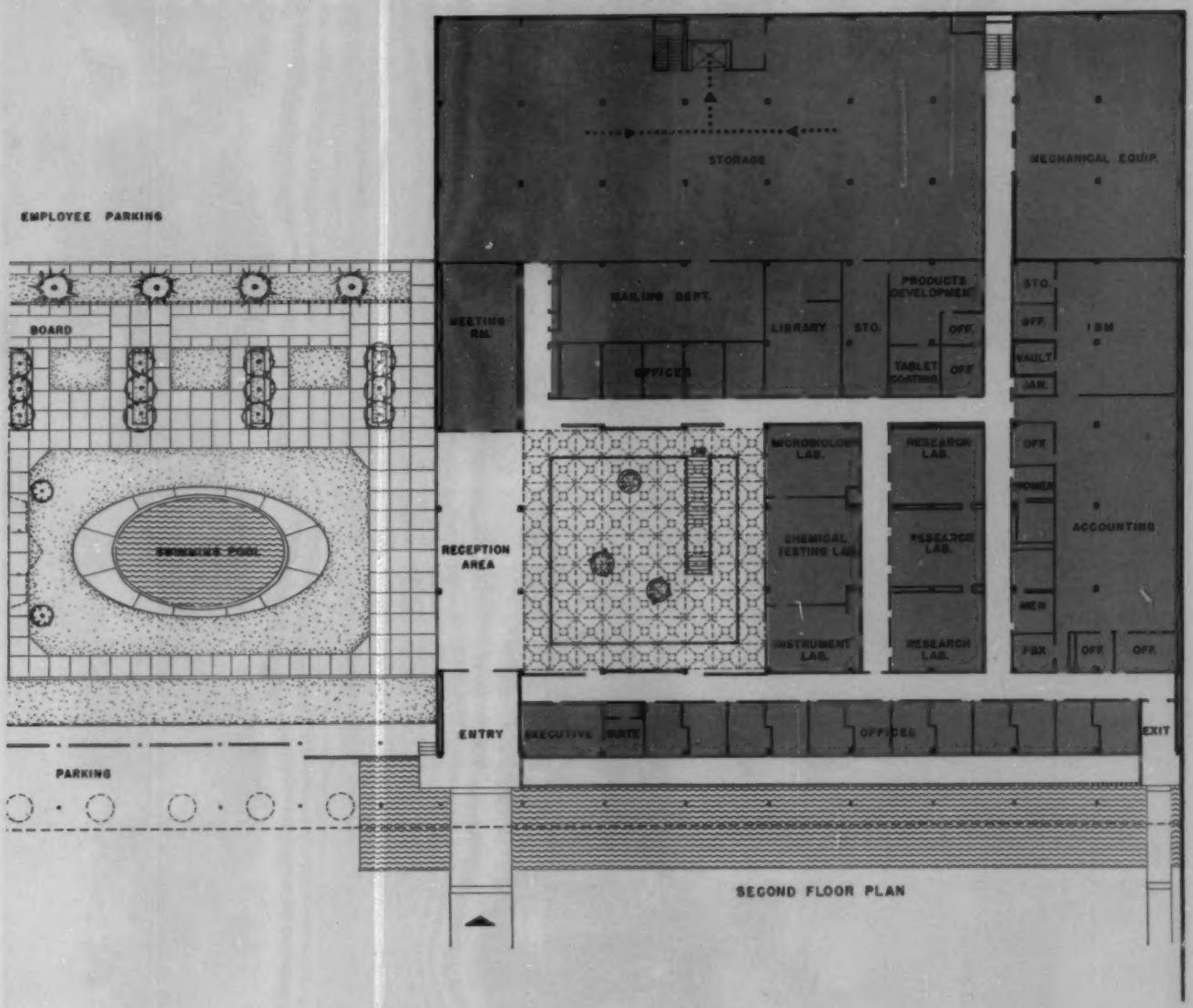
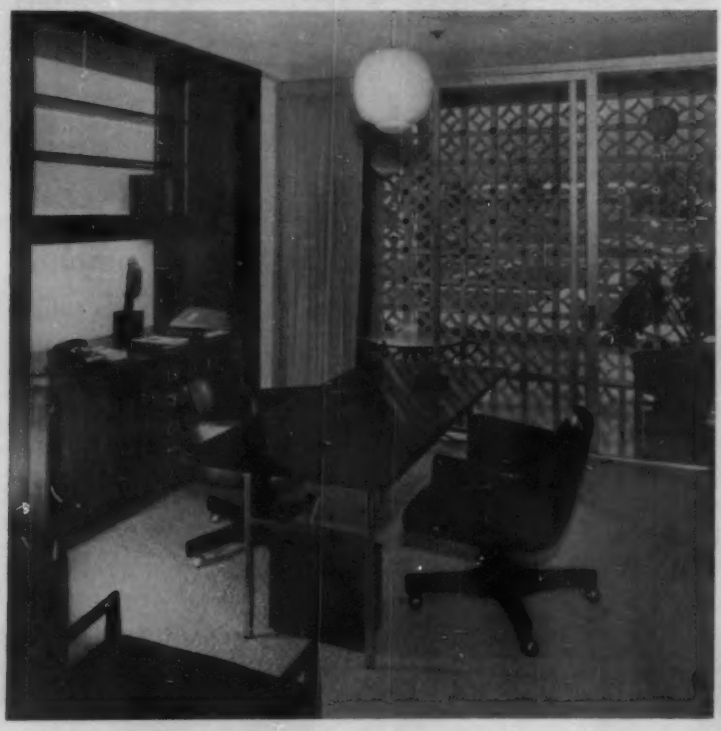
DN.
GUEST



The Stuart Company

The upper floor is entered from street level and houses reception areas, testing and control laboratories, offices and general storage. Laboratories have large glass areas to give technicians views of the atrium, and to permit visitors to sightsee without endangering work in progress. The storage area is designed and finished to permit future expansion of rooms at this level. The atrium garden is dramatically roofed by a coffered, suspended plaster ceiling, punctured by 81 plastic skylights. The actual roof is steel decking. Exterior walls of the building below grade are reinforced concrete. Above grade and in the atrium, they are concrete block cast with an oval "capsule" pattern. Dust is controlled by special exhaust scoops at sources of dust, and expelled through underground ducts. The swimming pool area on the plan above is on the lower level, with direct access from the atrium garden; the pool pavilion will be a gold hyperbolic parabaloid.

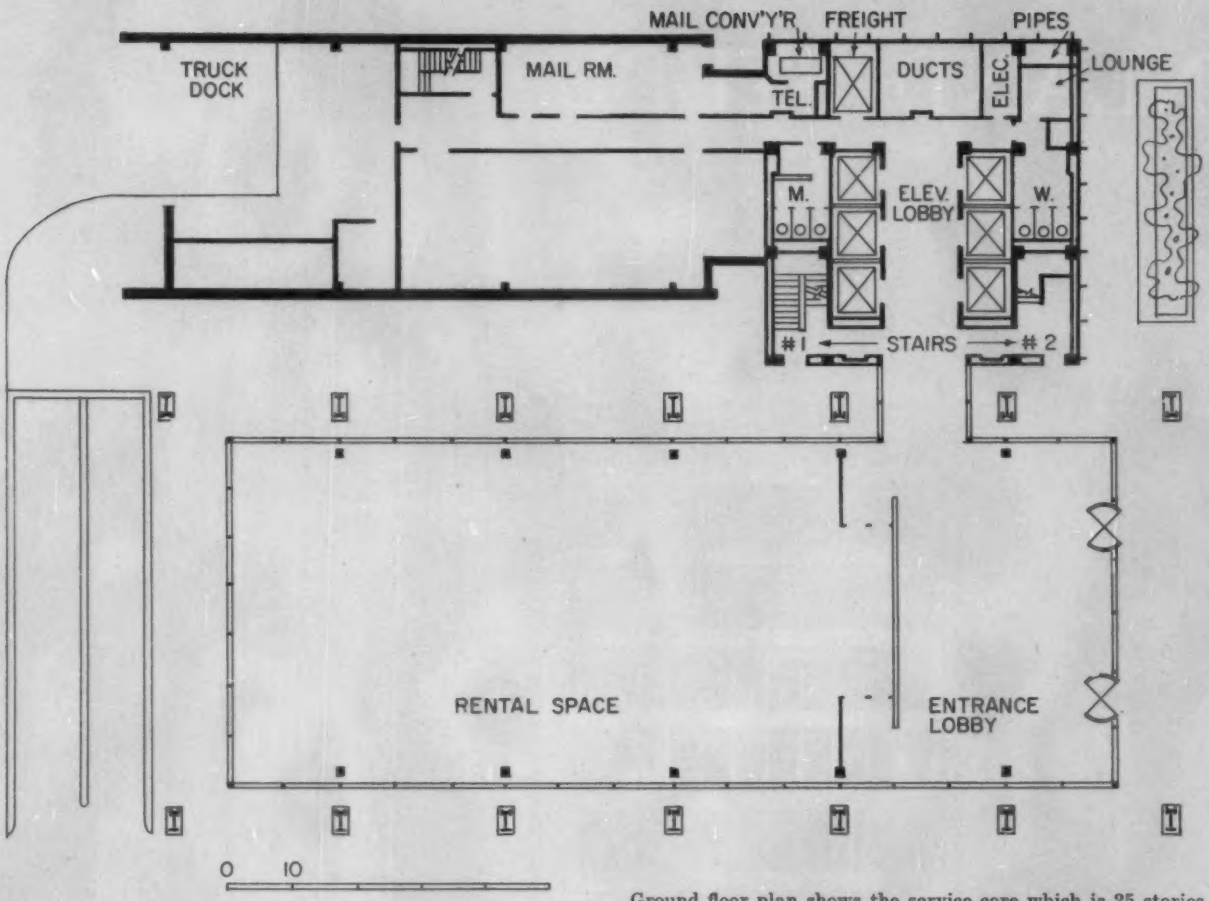


The Stuart Company

The executive offices and meeting rooms carry out the same decorative schemes—colors, grills, and plants—as the rest of the building. Each office has a private terrace overhanging the front pool and screened from the street. The conference room shown at top can be divided into smaller rooms. At the center is the office of the company's president Arthur O. Hanisch (shown seated, with his assistant Ludwig Lauerhass).

INLAND STEEL

Skidmore, Owings & Merrill, Architects and Engineers



Ground floor plan shows the service core which is 25 stories, the office building which is 19 and the two story service annex

Inland Steel Building, Chicago, Illinois

Skidmore, Owings & Merrill, Architects and Engineers

Turner Construction Company, General Contractor

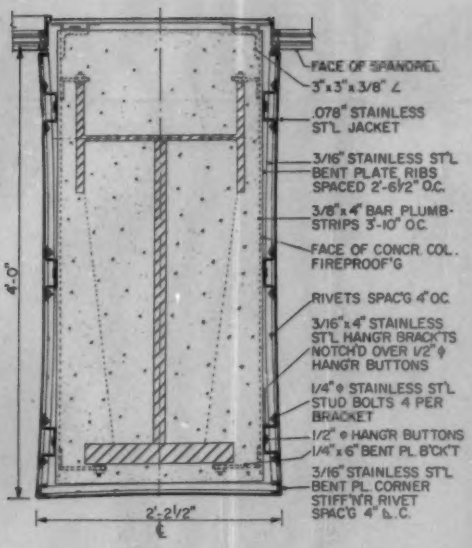
Ideally, the architect would like column-less space and wafer-thin walls for an office building. Essentially this is what has happened in the Inland Steel Building, because all the columns are outside the skin, and the stainless steel sheathed walls are only 2 in. thick. What a contrast to the 70-year-old Monadnock Building a few blocks away with 6-ft load-bearing masonry walls at its base! In this first major building to be erected in the Chicago Loop (Dearborn and Monroe) in the last 20 years, the designers have coupled planning ingenuity with advanced engineering techniques to produce light, airy, uncluttered office space, and at the same time a glittering demonstration of the potentialities of steel for skin, structure and services.

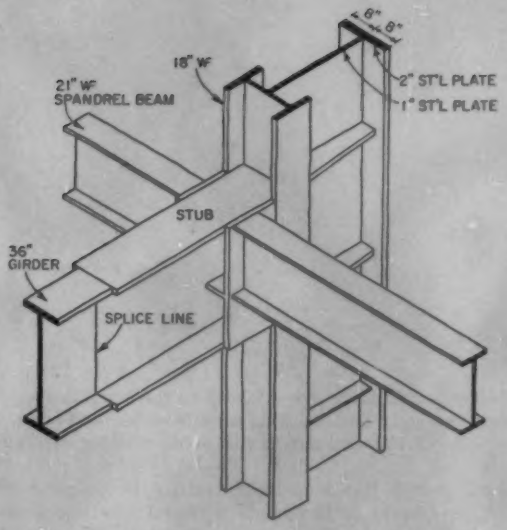
There are two features which make every floor free from all obstructions. First, the architects have bodily taken the service core away from the building proper and put the vertical service distribution into a 25-story windowless, stainless steel tower. Here are carried the elevators, building power, air conditioning ducts, chilled water and condenser water risers, plumbing piping, mail conveyor, stairs, etc. The 19-story office building, which has an exterior of approximately one-third stainless steel and two-thirds glass, is framed by seven slender steel columns on each of the broad sides, spanned by uninterrupted 60-ft plate girders. This, it is believed, gives the widest clear span of floor space ever designed for a multi-story building. Solution to the connection between columns and long-span beams to resist wind loads was considered most unusual.

The spandrel panels are of 16 gage stainless steel backed by 2 in. of lightweight concrete; windows are double-glazed, the outer pane being solar-reducing. In combination they weigh about 15 lb per sq ft. Columns, 4 by 2½ ft, and 25 ft 10 in. on center, were wrapped with 18 gage stainless steel covers. Mullions at 5 ft 2 in. on center set the modular dimension; they are channeled to guide cleaning scaffold.

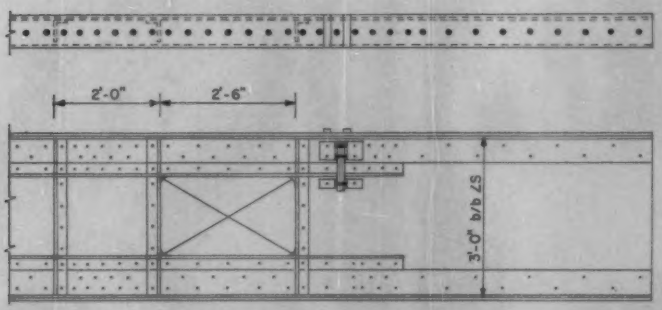
Main problems in connection with air conditioning were: maximum economy of space; minimum floor to floor heights; compensation for large areas of glass, and for the four orientations; compensation for internal heat gain from lights. The web of each plate girder has a number of large openings provided to accommodate ducts and service equipment. Hot and cold air supply is distributed to the sill units through a perimeter band of cellular steel flooring after it leaves sound attenuator boxes.

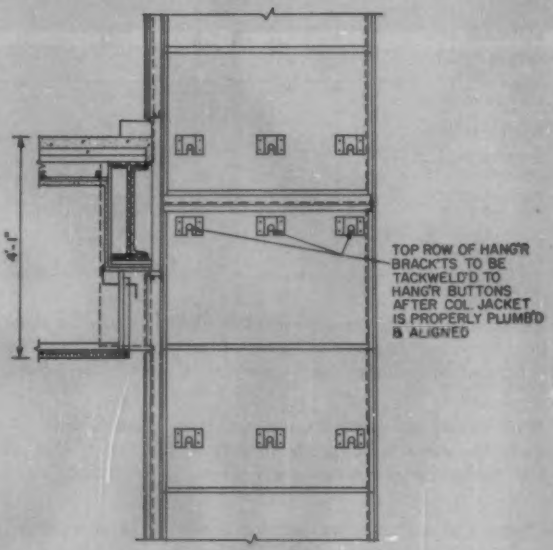
Hedrich-Blessing photos


FACE OF SPANDREL
3"x3"x3/8" ∠
.078" STAINLESS ST'L JACKET
3/16" STAINLESS ST'L BENT PLATE RIBS SPACED 2'-6 1/2" O.C.
3/8"x4" BAR PLUMB-STRIPS 3'-10" O.C.
FACE OF CONCR. COL. FIREPROOF'G
RIVETS SPAC'G 4" O.C.
3/16"x4" STAINLESS ST'L HANG'R BRACK'TS NOTCH'D OVER 1/2" ϕ HANG'R BUTTONS
1/4" ϕ STAINLESS ST'L STUD BOLTS 4 PER BRACKET
1/2" ϕ HANG'R BUTTONS
1/4"x6" BENT PL. B'CK'T
3/16" STAINLESS ST'L BENT PL. CORNER STIFF'N'R RIVET SPAC'G 4" O.C.
4'-0"
2'-2 1/2"
℄

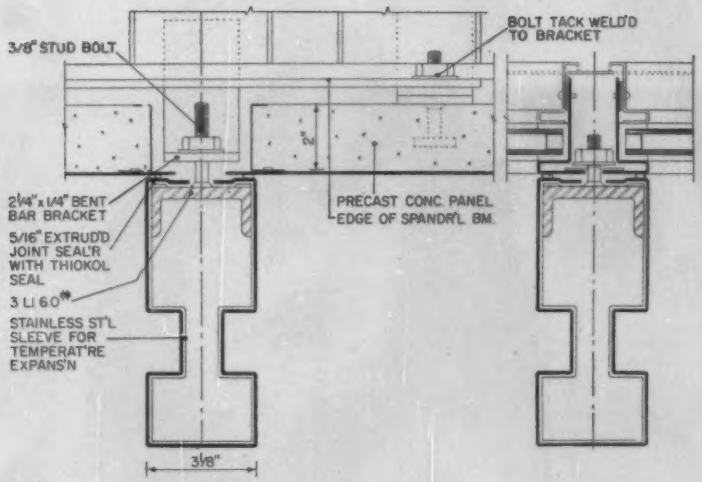


Main problem in development of the building frame was making it stable against wind load applied to ends of the building. Because spandrel beam was pulled inside and did not coincide with columns it was necessary to design a joint which: (1) distributed wind load between columns and spandrels; (2) furnished lateral support for outer flanges of columns; (3) distributed dead, live and wind loads between girders and columns. Solution was a "torque" joint shown at right. Torque boxes were fabricated with columns, making field connection with girders simple. Drawing above shows how stainless steel cover was stiffened and fastened



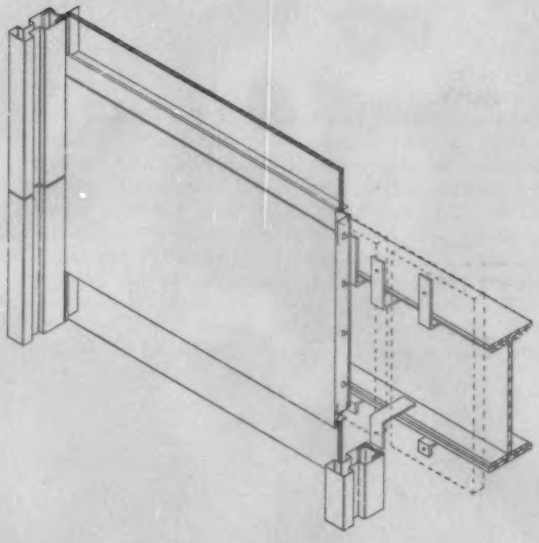


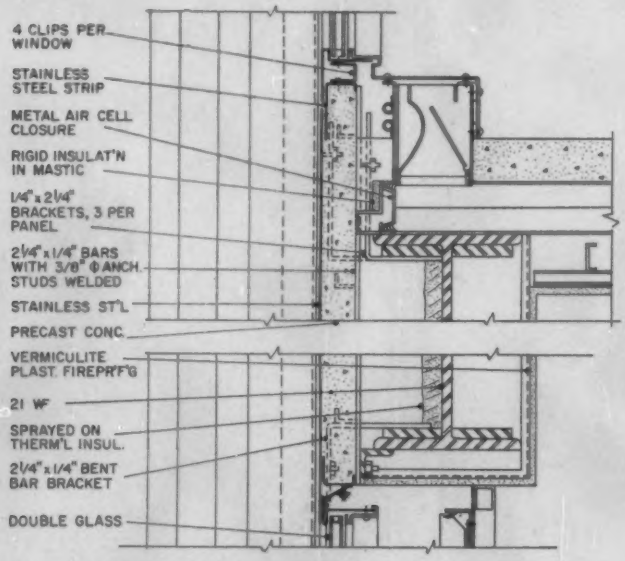
Section of a plate girder is shown above with openings for ducts and other services. Solid web at right extends for some distance yet before framing into stub. Girders were fireproofed with sprayed-on vermiculite plaster, columns with stone concrete. Side elevation of column shows hanger brackets for anchoring the stainless steel column covers


3/8" STUD BOLT
BOLT TACK WELD'D TO BRACKET
2¼" x 1/4" BENT BAR BRACKET
5/16" EXTRUD'D JOINT SEAL'R WITH THIOKOL SEAL
3 LI 60
STAINLESS ST'L SLEEVE FOR TEMPERAT'RE EXPANS'N
PRECAST CONC. PANEL EDGE OF SPANDR'L BM.
3⅛"

Panels and mullions are attached to the building frame with a series of bolts and brackets as illustrated in details. Adjustment for field tolerances can be accommodated at the mullions

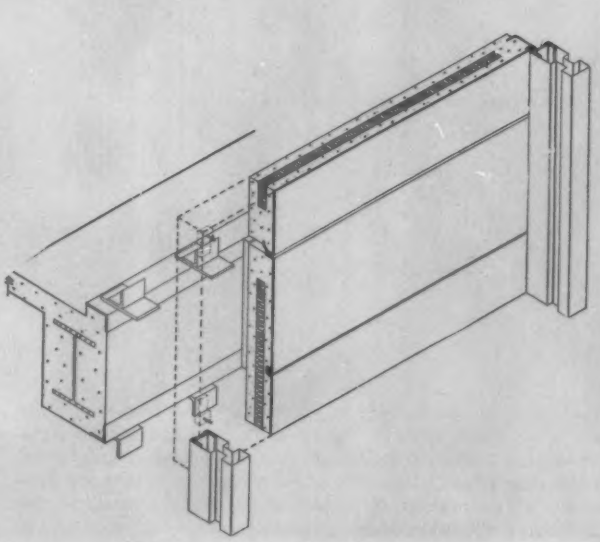
Mullions are drawn up tight against the stainless steel skin and are sealed at the joints with extruded joint sealer. Isometric at right shows spandrel panels for office building




4 CLIPS PER WINDOW
STAINLESS STEEL STRIP
METAL AIR CELL CLOSURE
RIGID INSULAT'N IN MASTIC
1/4" x 2¼" BRACKETS, 3 PER PANEL
2¼" x 1/4" BARS WITH 3/8" Φ ANCH. STUDS WELDED
STAINLESS ST'L
PRECAST CONC.
VERMICULITE PLAST. FIREPR'F'G
21 WF
SPRAYED ON THERM'L. INSUL.
2¼" x 1/4" BENT BAR BRACKET
DOUBLE GLASS

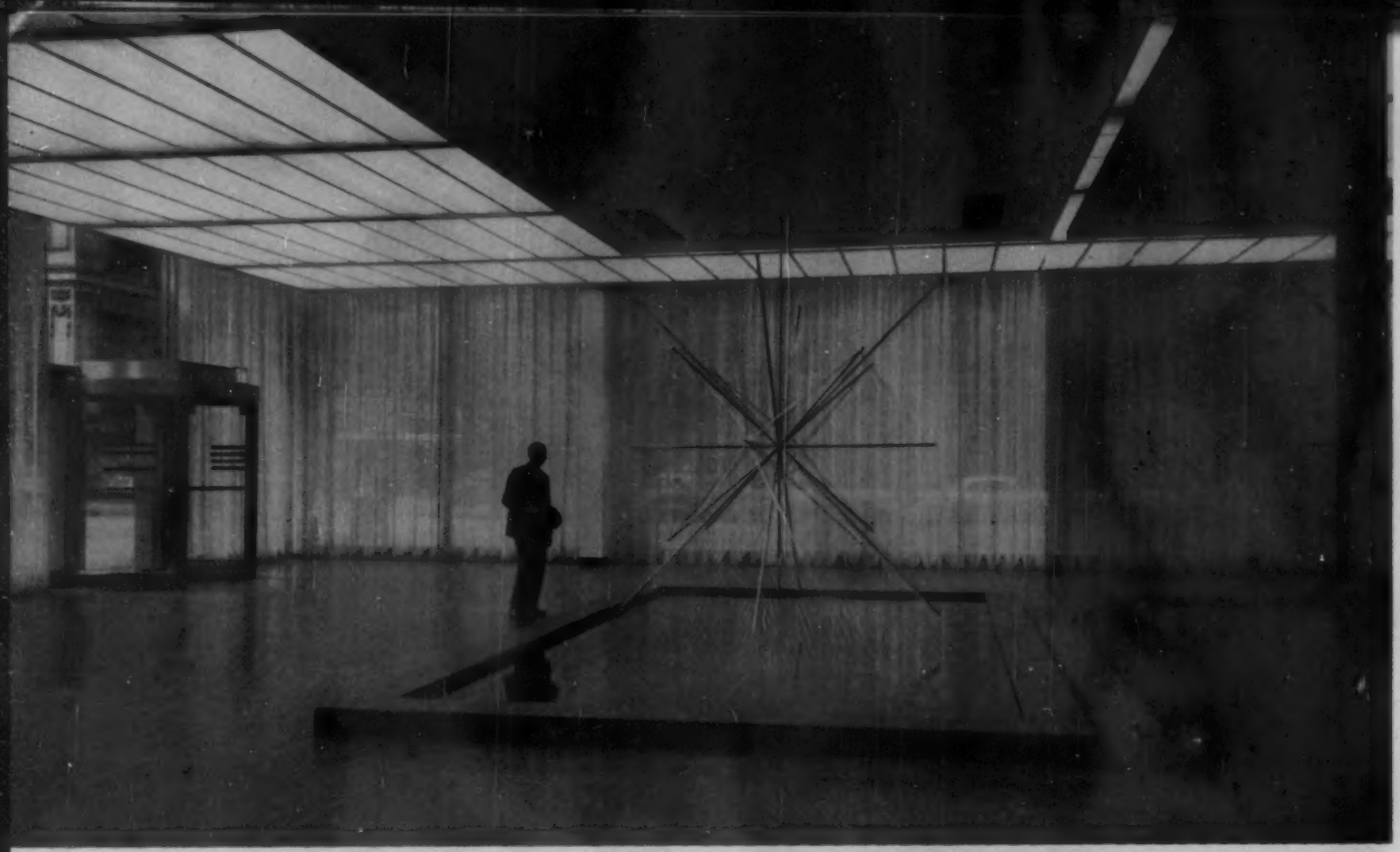
Detail above indicates construction at head and sill; shows sill box for admitting air in front of glass at perimeter. Air is delivered by cellular metal decking to underside of sill box

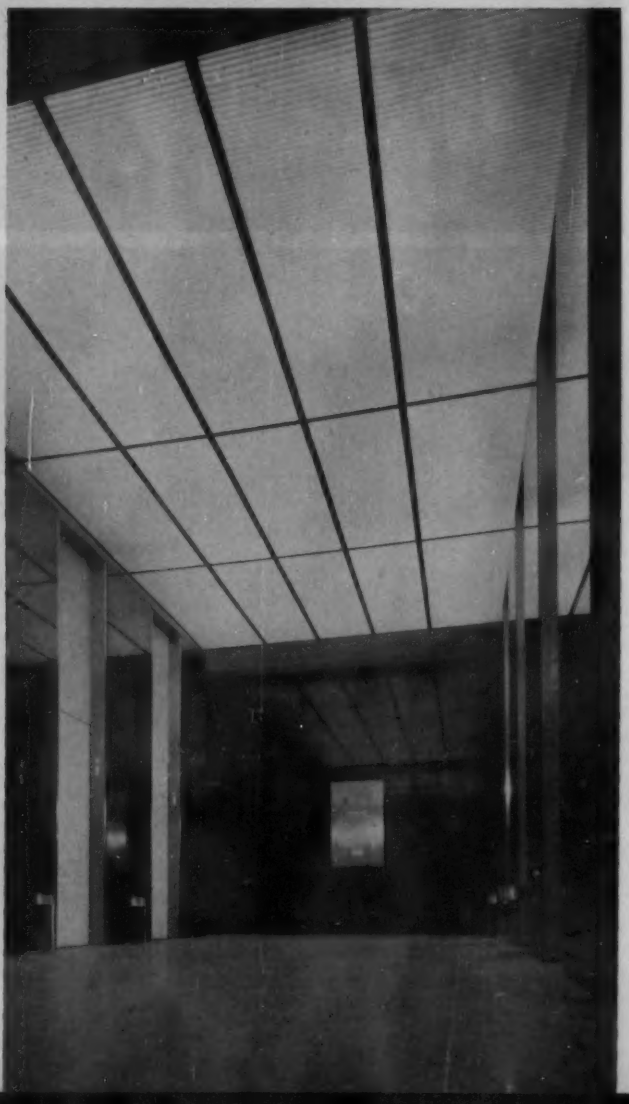
Wall panels for service tower are 5 in. thick instead of 2 in. as in the office building; have core of insulation also. Essential fastening components are given in isometric, right



Photos: at top, 2-story service annex is in foreground, 25-story service tower to left. Window washer follows mullion guides. At bottom is Dearborn St. façade

Drawings adapted from "Data on Stainless Steel Curtain Walls," School of Architecture, Princeton University





(Top) Entrance lobby displaying enamelled steel wire sculpture by Richard Lippold

(Center) Executive office. Daylight is controlled by transverse vertical blinds with fabric louvers. Executive lounge chairs of leather and steel were designed by the architects

(Right) Elevator lobby walls are of Belgian black marble

(Top) Interior office walls are moveable steel and glass partitions. The ceiling is made of perforated steel acoustical panels with recessed fluorescent lighting, air diffusers and exhausts

(Center) Looking northwest across 19th or top floor Directors Room; massive translucent glass doors at center left slide on overhead track

(Bottom) 19th or top executive floor, looking west from elevator area along reception room across main north-south hallway through executive office to far west building wall

Air conditioning is provided by five dual-duct high velocity systems feeding perimeter and interior sound attenuating chambers or sound boxes which are located above the suspended ceiling on each floor. (Supply and return ducts from service core are shown in top photo.) The discharge from the perimeter zone sound boxes is connected into the underside of the cellular steel deck (see bottom photo). The air passes through the deck to the perimeter of the building where it is discharged vertically upward in front of the glass to a series of grilles located 5 ft 2 in. on center around the entire perimeter of the building. The interior zone sound boxes supply air through overhead ceiling diffusers (see center photo). The return air is taken through ceiling diffusers which are connected to a high velocity return air system. The perimeter grilles and overhead air diffusers and lights are arranged in such a manner as to permit partitions to be located at 5 ft 2 in. centers in either direction without modification of the air supply or return system. The duct layout is such that both the interior and perimeter zone sound boxes are fed from the same set of hot and cold ducts on each floor.

Because of area and height restrictions, the building is divided horizontally so that each four or five floors are supplied from a separate system. Also a separate system serves the first two floors of the building. The major items of air handling equipment are located as follows: two systems in the upper penthouse floors, three systems located in the sub-basement area.

The system was selected to permit a minimum area in the core and maximum overall economy. It provided maximum flexibility of temperature control within each space or possible future space division; it provided the lowest configuration at the building perimeter; and it allowed taking advantage of the diversity of load between the four orientations and the interior zone from the point of view of reduction of refrigeration load.

The controls are arranged to permit either individual thermostatic control of each sound box or group control of several sound boxes from a single room thermostat or return air thermostat.

Cooling in the summer is provided by means of chilled water which is generated in the sub-basement. Condenser water for the refrigeration equipment is provided by means of cooling towers which are located on the roof of the building core.

The Highway and the City

By Lewis Mumford

Illustrations by Alan Dunn

The God on Wheels

When the American people, through their Congress, voted last year for a twenty-six-billion-dollar highway program, the most charitable thing to assume about this action is that they hadn't the faintest notion of what they were doing. Within the next fifteen years they will doubtless find out; but by that time it will be too late to correct all the damage to our cities and our countryside, to say nothing of the efficient organization of industry and transportation, that this ill-conceived and absurdly unbalanced program will have wrought. Yet if someone had foretold these consequences before this vast sum of money was pushed through Congress, under the specious guise of a national defense measure, it is doubtful whether our countrymen would have listened long enough to understand; or would even have been able to change their minds if they did understand. For the current American way of life is founded not just on motor transportation but on the religion of the motor car, and the sacrifices that people are prepared to make for this religion stand outside the realm of rational criticism. Perhaps the only thing that could bring Americans to their senses would be a clear demonstration of the fact that their highway program will, eventually, wipe out the very area of freedom that the private motor car promised to retain for them.

Our Motorized Mistress

As long as motor cars were few in number, he who had one was a king: he could go where he pleased and halt where he pleased; and this machine itself appeared as a compensatory device for enlarging an ego which had been shrunken by our very success in mechanization. That sense of freedom and power remains a fact today only in low-density areas, in the open country; the popularity of this method of escape has ruined the promise it once held forth. In using the car to flee from the metropolis the motorist finds that he has merely transferred congestion to the highway; and when he reaches his destination, in a distant suburb, he finds that the countryside he sought has disappeared: beyond him, thanks to the motorway, lies only another suburb, just as dull as his own. To have a minimum amount of communication and sociability in this spread out life, his wife becomes a taxi-driver by daily occupation, and the amount of money it costs to keep this whole system running leaves him with shamefully overtaxed schools, inadequate police, poorly staffed hospitals, overcrowded recreation areas, ill-supported libraries.

In short, the American has sacrificed his life as a whole to the motor car, like someone who, demented with passion, wrecks his home in order to lavish his income on a capricious mistress who promises delights he can only occasionally enjoy.

"The countryside (the motorist) sought has disappeared"

"The building of a highway has about the same result . . . . as the passage of a tornado."

Delusions of Progress

For most Americans, progress means accepting what is new because it is new, and discarding what is old because it is old. This may be good for a rapid turnover in business, but it is bad for continuity and stability in life. Progress, in an organic sense, should be cumulative, and though a certain amount of rubbish-clearing is always necessary, we lose part of the gain offered by a new invention if we automatically discard all the still valuable inventions that preceded it. In transportation, unfortunately, the old-fashioned linear notion of progress prevails. Now that motor cars are becoming universal, many people take for granted that pedestrian movement will disappear and that the railroad system will in time be abandoned; in fact, many of the proponents of highway building talk as if that day were already here, or if not, they have every intention of making it dawn quickly. The result is that we have actually crippled the motor car, by placing on this single means of transportation the burden for every kind of travel. Neither our cars nor our highways can take such a load. This overconcentration, moreover, is rapidly destroying our cities, without leaving anything half as good in their place.

What's Transportation For?

This is a question that highway engineers apparently never ask themselves: probably because they take for granted the belief that transportation exists for the purpose of providing suitable outlets for the motor car industry. To increase the number of cars, to enable motorists to go longer distances, to more places, at higher speeds has become an end in itself. Does this over-employment of the motor car not consume ever larger quantities of gas, oil, concrete, rubber, and steel, and so provide the very groundwork for an expanding economy? Certainly, but none of these make up the essential purpose of transportation, which is to bring people or goods to places where they are needed, and to concentrate the greatest variety of goods and people within a limited area, in order to widen the possibility of choice without making it necessary to travel. A good transportation system minimizes unnecessary transportation; and in any event, it offers a change of speed and mode to fit a diversity of human purposes.

Diffusion and concentration are the two poles of transportation: the first demands a closely articulated network of roads—ranging from a foot-path to a six-lane expressway and a transcontinental railroad system. The second demands a city. Our major highway systems are conceived, in the interests of speed, as linear organizations, that is to say as arteries. That conception would be a sound one, provided the major arteries were not over-developed to the exclusion of all the minor elements of transportation. Highway planners have yet to realize that these arteries must not be thrust into the delicate tissue of our cities; the blood they circulate must rather enter through elaborate network of minor blood vessels and capillaries. As early as 1929 Benton MacKaye worked out the rationale of sound highway development, in his conception of the Townless Highway; and this had as its corollary the Highwayless Town. In the quarter century since, all the elements of MacKaye's conception have been carried out, except the last—certainly not the least.

The Highway as a Work of Art

In many ways, our highways are not merely masterpieces of engineering, but consummate works of art: a few of them, like the Taconic State Parkway in New York, stand on a par with our highest creations in other fields. Not every highway, it is true, runs through country that offers such superb opportunities to an imaginative highway builder as this does; but then not every engineer rises to his opportunities as the planners of this highway did, routing the well-separated roads along the ridgeways, following the contours, and thus, by this single stratagem, both avoiding towns and villages and opening up great views across country, enhanced by a lavish planting of flowering bushes along the borders. If this standard of comeliness and beauty were kept generally in view, highway engineers would not so often lapse into the brutal assaults against the landscape and against urban order that they actually give way to when they aim solely at speed and volume of traffic, and bulldoze and blast their way across country to shorten their route by a few miles without making the total journey any less depressing.

Perhaps our age will be known to the future historian as the age of the bulldozer and the exterminator; and in many parts of the country the building of a highway has about the same result upon vegetation and human structures as the passage of a tornado or the blast of an atom bomb. Nowhere is this bulldozing habit of mind so disastrous as in the approach to the city. Since the engineer regards his own work as more important than the other human functions it serves, he does not hesitate to lay waste to woods, streams, parks and human neighborhoods in order to carry his roads straight to their supposed destination.

The Need for a Transportation System

The fatal mistake we have been making is to sacrifice every other form of transportation to the private motor car—and to offer as the only long-distance alternative the airplane. But the fact is that each type of transportation has its special use; and a good transportation policy must seek to improve each type and make the most of it. This cannot be achieved by aiming at high speed or continuous flow alone. If you wish casual opportunities for meeting your neighbors, and for profiting by chance contacts with

"We have forgotten how much more efficient and how much more flexible the footwalker is"

"Provided that a miniscule size town car takes the place of the long-tailed dinosaurs that now lumber about our metropolitan swamps"

acquaintances and colleagues, a stroll at two miles an hour in a relatively concentrated area, free from vehicles, will alone meet your need. But if you wish to rush a surgeon to a patient a thousand miles away, the fastest motorway is too slow. And again, if you wish to be sure to keep a lecture engagement in winter, railroad transportation offers surer speed and better insurance against being held up than the airplane. There is no one ideal mode or speed: human purpose should govern the choice of the means of transportation. That is why we need a better transportation *system*, not just more highways. The projectors of our national highway program plainly had little interest in transportation. In their fanatical zeal to expand our highways, the very allocation of funds indicates that they are ready to liquidate all other forms of land and water transportation.

The Traffic Pyramids

In order to overcome the fatal stagnation of traffic in and around our cities, our highway engineers have come up with a remedy that actually expands the evil it is meant to overcome. They create new expressways to serve cities that are already overcrowded within, thus tempting people who had been using public transportation to reach the urban centers to use these new private facilities. Almost before the first day's tolls on these expressways have been counted, the new roads themselves are overcrowded. So a clamor arises to create other similar arteries and to provide more parking garages in the center of our metropolises; and the generous provision of these facilities expands the cycle of congestion, without any promise of relief until that terminal point when all the business and industry that originally gave rise to the congestion move out of the city, to escape strangulation, leaving a waste of expressways and garages behind them. This is pyramid building with a vengeance: a tomb of concrete roads and ramps covering the dead corpse of a city.

But before our cities reach this terminal point, they will suffer, as they now do, from a continued erosion of their social facilities: an erosion that might have been avoided if engineers had understood MacKaye's point that a motorway, properly planned, is another form of railroad for private use. Unfortunately, highway engineers, if one is to judge by their usual performance, lack both historic insight and social memory: accordingly, they have been repeating, with the audacity of confident ignorance, all the mistakes in urban planning committed by their predecessors who designed our railroads. The wide swathes of land devoted to cloverleaves and expressways, to parking lots and parking garages, in the very heart of the city, butcher up precious urban space in exactly the same way that freight yards and marshalling yards did when the railroads dumped their passengers and freight inside the city. These new arteries choke off the natural routes of

circulation and limit the use of abutting properties, while at the points where they disgorge their traffic, they create inevitable clots of congestion, which effectively cancel out such speed as they achieve in approaching these bottlenecks.

Today the highway engineers have no excuse for invading the city with their regional and transcontinental trunk systems: the change from the major artery to the local artery can now be achieved without breaking the bulk of goods or replacing the vehicle: that is precisely the advantage of the motor car. Arterial roads, ideally speaking, should engirdle the metropolitan area and define where its greenbelt begins; and since American cities are still too impoverished and too improvident to acquire greenbelts, they should be planned to go through the zone where relatively high-density building gives way to low-density building. On this perimeter, through traffic will bypass the city, while cars that are headed for the center will drop off at the point closest to their destination. Since I don't know a city whose highways have been planned on this basis, let me give as an exact parallel the new semi-circular railroad line, with its suburban stations, that by-passes Amsterdam. That is good railroad planning, and it would be good highway planning, too, as the Dutch architect H. Th. Wijdeveld long ago pointed out. It is on relatively cheap land, on the edge of the city, that we should be building parking areas and garages: with free parking privileges, to tempt the commuter to leave his car and finish his daily journey on the public transportation system. The public officials who have been planning our highway system on just the opposite principle are likewise planning to make the central areas of our cities unworkable and uninhabitable. Route 128 in Boston is a belated effort to provide such a circular feeder highway; but its purpose is cancelled by current plans for arterial roads gouging into the center of the city.

Down and Up with the Elevated

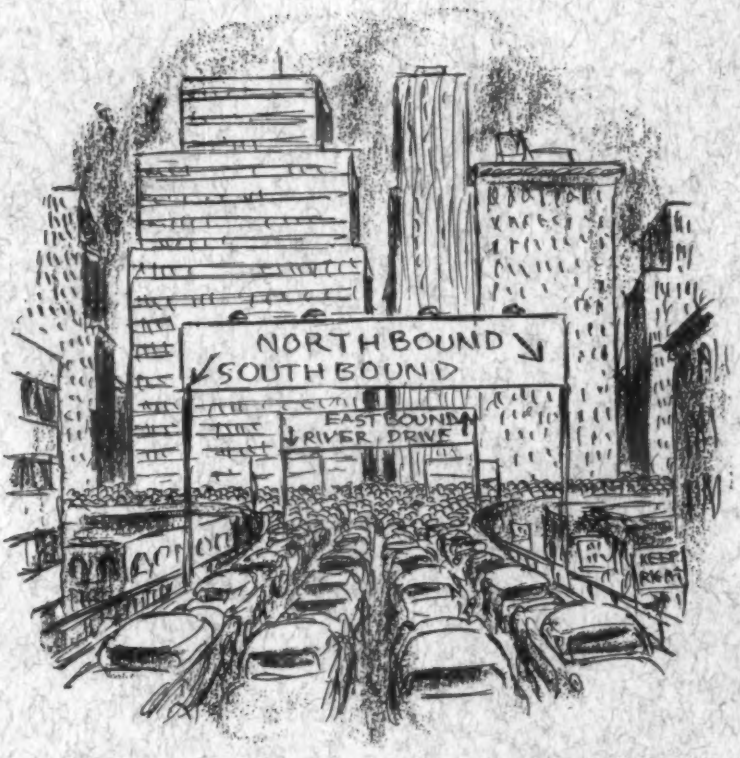
Just as highway engineers know too little about city planning to correct the mistakes made in introducing the early railroad systems into our cities, so, too, they have curiously forgotten our experience with the elevated railroad—and unfortunately most municipal authorities have been equally forgetful. In the middle of the nineteenth century the elevated seemed the most facile and up-to-date method of introducing a new kind of rapid transportation system into the city; and in America, New York led the way in creating four such lines on Manhattan Island alone. The noise of the trains and the overshadowing of the structure lowered the value of the abutting properties even for commercial purposes; and the supporting columns constituted a dangerous obstacle to surface transportation. So unsatisfactory was elevated transportation even in cities like Berlin, where the structures were, in contrast to New York, Philadelphia, and Chicago, rather handsome works of engineering, that by popular consent subway building replaced elevated railroad building in all big cities, even though no one could pretend that riding in a tunnel was nearly as pleasant to the rider as was travel in the open air. The destruction of the old elevated railroads in New York was, ironically, hailed as a triumph of progress precisely at the moment that a new series of elevated highways were being built, to repeat on a more colossal scale the same errors.

Highway Robbery

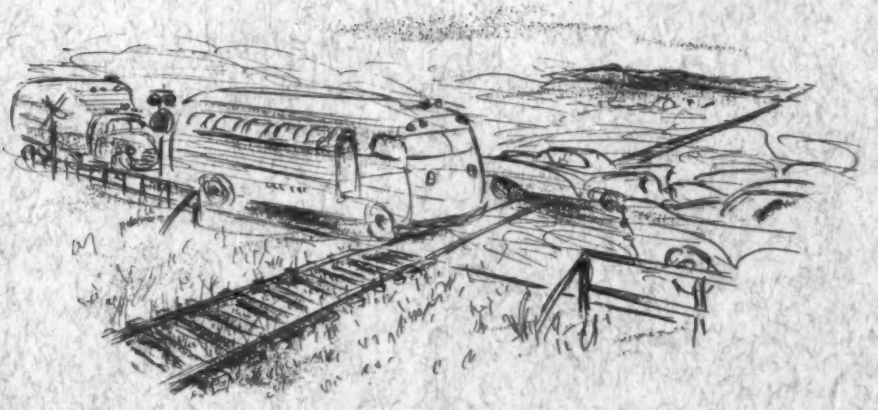
Like the railroad, again, the motorway has repeatedly taken possession of the most valuable recreation space the city possesses, not merely by thieving land once dedicated to park uses, but by cutting off easy access to the waterfront parks, and lowering their value for refreshment and repose by introducing the roar of traffic and the bad odor of exhausts, though both noise and carbon monoxide are inimical to health. Witness the shocking spoilage of the Charles River basin parks in Boston, the arterial blocking off of the Lake Front in Chicago (after the removal of the original usurpers, the railroads), the barbarous sacrifice of large areas of Fairmount Park in Philadelphia, the proposed defacement of the San Francisco waterfront. One may match all these social crimes with a hundred other examples of barefaced highway robbery in every other metropolitan area. Even when the people who submit to these annexations and spoliations are dimly aware of what they are losing, they submit without more than a murmur of protest. What they do not understand is that they are trading a permanent good for a very temporary advantage, since until we subordinate highway expansion to the more permanent requirements of regional planning, the flood of motor traffic will clog new channels. What they further fail to realize is that the vast sums of money that go into such enterprises drain necessary public monies from other functions of the city, and make it socially if not financially bankrupt.

The Cart Before the Horse

Neither the highway engineer nor the urban planner can, beyond a certain point, plan his facilities to accommodate an expanding population. On the overall problem of population pressure, regional and national policies must be developed for throwing open, within our country, new regions of settlement, if this pressure, which appeared so suddenly, does not in fact abate just as unexpectedly and just as suddenly. But there can be no sound planning anywhere until we understand the necessity for erecting norms, or ideal limits, for density of population. Most of our congested metropolises need a lower density of population, with more parks and open spaces, if they are



"At the point where (these new expressways) disgorge their traffic they create inevitable clots of congestion"



"Mass transportation by rail . . . . has been permitted to languish"

to be attractive enough physically to retain even a portion of their population for day-and-night living; but most of our suburban and exurban communities must replan large areas at perhaps double their present densities in order to have the social, educational, recreational, and industrial facilities they need closer at hand. Both suburb and metropolis need a regional form of government, working in private organizations as well as public forms, to reapportion their resources and facilities, so as to benefit the whole area.

To say this is to say that both metropolitan congestion and suburban scattering are obsolete. This means that good planning must work to produce a radically new pattern for urban growth. On this matter, public policy in the United States is both contradictory and self-defeating. Instead of lowering central area densities, most urban renewal schemes, not least those aimed at housing the groups that must be subsidized, either maintain old levels of congestion, or create higher levels than existed in the slums they replaced. But the Home Loan agencies, on the other hand, have been subsidizing the wasteful, ill-planned, single-family house, on cheap land, ever remoter from the center of our cities; a policy that has done as much to promote the suburban drift as the ubiquitous motor car. In order to cement these errors in the most solid way possible, our highway policy maximizes congestion at the center and expands the area of suburban dispersion—what one might call the metropolitan "fall-out." The three public agencies concerned have no official connections with each other: but the total result of their efforts proves, once again, that chaos does not have to be planned.

Tiny Tims on Wheels

Motor car manufacturers look forward confidently to the time when every family will have two, if not three, cars. I would not deny them that hope, though I remember that it was first voiced in 1929, just before the fatal crash of our economic system, too enamored of high profits even to save itself by temporarily lowering prices. But if they don't want the motor car to paralyze urban life, they must abandon their fantastic commitment to the indecently tumescent chariots they have been putting on the market. For long-distance travel, the big car of course has many advantages; but for town use, let us insist upon a car that fits the city's needs: it is absurd to make over the city to fit the swollen imaginations of Detroit. The Isetta and the Gogomobil have already pointed the way; but what we need is an even smaller vehicle, powered by electricity, delivered by a powerful storage cell, yet to be invented. Maneuverability and parkability are the prime urban virtues in cars; and the simplest way to achieve this is by designing smaller cars. These virtues are lacking in all but one of our current American models. But why should our cities be destroyed just so that Detroit's follies should remain unchallenged and unchanged?

The Place of the Pedestrian

If we want to make the most of our New Highway program, we must keep most of the proposed expressways in abeyance until we have done two other things. We must re-plan the inner city for pedestrian circulation, and we must rebuild and extend our public forms of mass transportation. In our entrancement with the motor car, we have forgotten how much more efficient and how much more flexible the footwalker is. Before there was any public transportation in London, something like 50,000 people an hour used to pass over London Bridge on their way to work: a single artery. Mass public transportation can bring from forty to sixty thousand people per hour, along a single route, whereas our best expressways, using far more space, cannot move more than four to six thousand cars, and even if the average occupancy were more than one and a half passengers, as at present, this is obviously the most costly and inefficient means of handling the peak hours of traffic. As for the pedestrian, one could move a hundred thousand people, by the existing streets, from, say, downtown Boston to the Common, in something like half an hour, and find plenty of room for them to stand. But how many weary hours would it take to move them in cars over these same streets? And what would one do with the cars after they had reached the Common? Or where, for that matter, could one assemble these cars in the first place? For open spaces, long distances and low densities, the car is now essential; for urban space, short distances and high densities, the pedestrian.

Every urban transportation plan should, accordingly, put the pedestrian at the center of all its proposals, if only to facilitate wheeled traffic. But to bring the pedestrian back into the picture, one must treat him with the respect and honor we now accord only to the automobile: we should provide him with pleasant walks, insulated from traffic, to take him to his destination, once he enters a business precinct or residential quarter. Every city should heed the example of Rotterdam in creating the Lijnbaan, or of Coventry in creating its new shopping area. It is nonsense to say that this cannot be done in America, because no one wants to walk. Where walking is exciting and visually stimulating, whether it is in a Detroit shopping center or along Fifth Avenue, Americans are perfectly ready to walk. The legs will come into their own again, as the ideal means of neighborhood transportation, once some provision is made for their exercise, as Philadelphia is now doing, both in its Independence Hall area, and in Penn Center. But if we are to make walking attractive, we must not only provide trees and wide pavements and benches, beds of flowers and outdoor cafes, as they do in Rotterdam: we must also scrap the monotonous

uniformities of American zoning practice, which turns vast areas, too spread out for pedestrian movement, into single-district zones, for commerce, industry, or residential purposes. (As a result, only the mixed zones are architecturally interesting today despite their disorder.)

Why should anyone have to take a car and drive a couple of miles to get a package of cigarettes or a loaf of bread, as one must often do in a suburb? Why, on the other hand, should a growing minority of people not be able again to walk to work, by living in the interior of the city, or, for that matter, be able to walk home from the theater or the concert hall? Where urban facilities are compact, walking still delights the American: does he not travel many thousands of miles just to enjoy this privilege in the historic urban cores of Europe? And do not people now travel for miles, of an evening, from the outskirts of Pittsburgh, just for the pleasure of a stroll in Mellon Square? Nothing would do more to give life back to our blighted urban cores than to re-instate the pedestrian, in malls and pleasances designed to make circulation a delight. And what an opportunity for architecture!

The Case for Mass Transportation

While federal funds and subsidies pour without stint into highway improvements, the two most important modes of transportation for cities—the railroad for long distances and mass transportation, and subway for shorter journeys—are permitted to languish and even to disappear. This is very much like what has happened to our postal system. While the time needed to deliver a letter across the continent has been reduced, the time needed for local delivery has been multiplied. What used to take two hours now sometimes takes two days. As a whole our postal system has been degraded to a level that would have been regarded as intolerable even thirty years ago. In both cases, an efficient system has been sacrificed to a new industry, motor cars, telephones, airplanes; whereas, if the integrity of the system itself had been respected, each of these new inventions could have added enormously to the efficiency of the existing network.

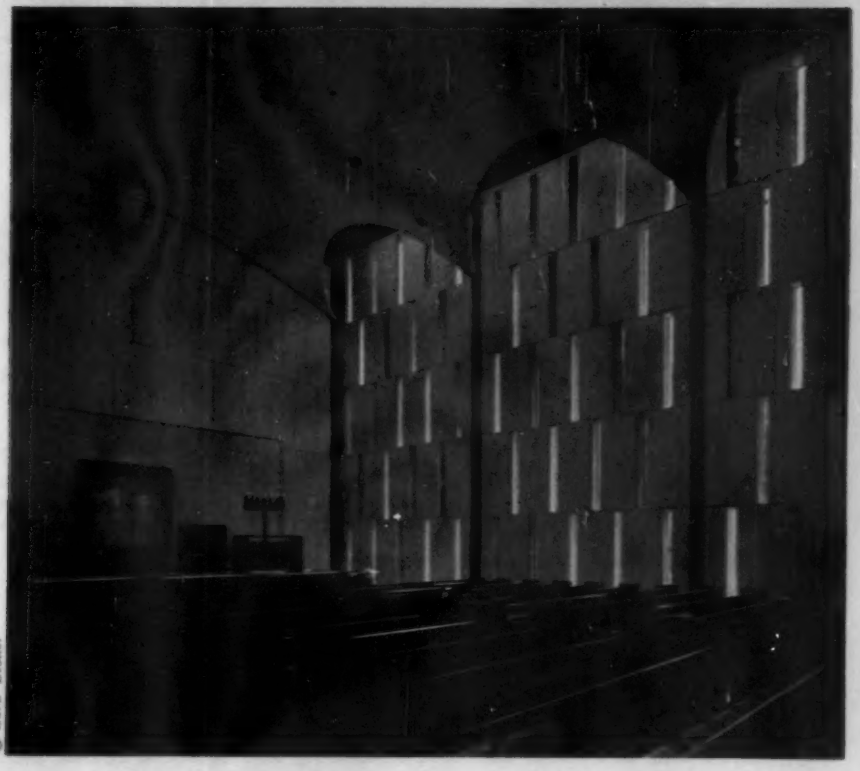
If we could overcome the irrational drives that are now at work, promoting shortsighted decisions, the rational case for re-building the mass transportation system in our cities would be overwhelming. The current objection to mass transportation comes chiefly from the fact that it has been allowed to decay: this lapse itself reflects the general blight of the central areas. In order to maintain profits, or in many cases to reduce deficits, rates have been raised, services have decreased, and equipment has become obsolete, without being replaced and improved. Yet mass transportation, with far less acreage in roadbeds and rights of way, can deliver at least ten times more people per hour than the private motor car. This means that if such means were allowed to lapse in our metropolitan centers—as the inter-urban electric trolley system, that beautiful and efficient network, was allowed to disappear in the nineteen twenties—we should require probably five to ten times the existing number of arterial highways to bring the present number of commuters into the city, and at least ten times the existing parking space to accommodate them.

This reduces a one-dimensional transportation system, by motor car alone, to a calamitous absurdity, as far as urban development goes, even if the number of vehicles and the population count were not increasing year by year. Now it happens that the population of the core of our big cities has remained stable in recent years: in many cases, the decline which set in as early as 1910 in New York seems to have ceased. This means that it is now possible to set an upper limit for the daily inflow of workers, and to work out a permanent mass transportation system that will get them in and out again as pleasantly and efficiently as possible. In time, if urban renewal projects become sufficient in number to permit the design of a system of minor urban throughways, at ground level, that will by-pass the neighborhood, even circulation by motor car may play a valuable part in the total scheme—provided, of course, that minuscule size town cars take the place of the long-tailed dinosaurs that now lumber about our metropolitan swamps. But the notion that the private motor car can be substituted for mass transportation should be put forward only by those who desire to see the city itself disappear, and with it the complex, many-sided civilization that the city makes possible.

Brakes and Accelerations

There is no purely engineering solution to the problems of transportation in our age: nothing like a stable solution is possible without giving due weight to all the necessary elements in transportation—private motor cars, railroads, airplanes and helicopters, mass transportation services by trolley and bus, even ferryboats, and finally, not least, the pedestrian. To achieve the necessary over-all pattern, not merely must there be effective city and regional planning, before new routes or services are planned; we also need eventually—and the sooner the better—an adequate system of federated metropolitan government. Until these necessary tools of control have been created, most of our planning will be empirical and blundering; and the more we do, on our present premises, the more disastrous will be the results. What is needed is more thinking on the lines that Robert Mitchell, Edmund Bacon, and Wilfred Owens have been following, and less action, until this thinking has been embodied in a new conception of the needs and possibilities of contemporary urban life. We cannot have an efficient form for our transportation system until we can envisage a better permanent structure for our cities.

Stained glass strips in K.T.I. Synagogue by Philip Johnson, Architect, use light to produce design effects both night and day. Lighting consultant was Richard Kelly. Stained glass consultant, John Johanson.



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LIGHTING *A Basis for Design*

In some areas of the building art, technology has barely kept pace with architectural concepts; in others it has gone hand-in-hand; but in the case of lighting, developments in sources of light (technically speaking) have been made available commercially much faster than they have been fully assimilated (in an architectural sense). This is not to say that in work-a-day situations lighting has not improved greatly—especially during the last 20 years since the introduction of the fluorescent lamp. The quantity of light available for offices is rapidly approaching the 500 foot-candle level—that is to say, it is feasible and is being done in demonstration situations. Even a 1000 foot-candle room exists! Along with these developments, studies have been made to determine optimum levels of illumination for specific tasks. And new results are being announced on the facility of recognition when certain tasks are viewed under "critical" levels of illumination. It should be emphasized that these studies have been almost completely in the realm of "human engineering," with practically no at-

tention to psychological-emotional responses of people working and living under these levels of illumination.

Practically everyone agrees that much more skill and knowledge must be put to the lighting problem before it can contribute something more than simply the ease of seeing. Architects are quite disturbed over the bland effect that has resulted from some of the newer luminous environments: the lighting has made every part of the space equally bright, and therefore equally important; at the same time the space has lost "dimension."

It would appear that the trouble today is not so much in having the proper light sources available, as in architects appreciating how these can be used successfully, and more specifically, what they really want them to contribute to the total design—in other words, accepting the premise that lighting is an element of design, what are the lighting effects that are desired? After all, lighting should not be thought of as something over and above good or bad architecture—that which is applied to the good to make it better, or the bad to save it; for surely it is a fundamental element in design. While the architect may feel he is striving for certain visual effects, what he has in mind generally is the appearance of fixtures per se, rather than light itself as it is reflected from various surfaces.

There are several hurdles in the way of more expressive lighting. First of all the architect has to be able to state the lighting problem for a particular building. For what purposes is light to be used: in a purely functional way (for reading; for following paths of circulation) or, in addition, to make a room seem large or small, gay or restful, or enhance emotional and tactile sensations through color and texture? Unfortunately the architect has come to rely too heavily on the engineering specialist for design suggestions. There is much stimulus to be gained from some of the engineering tools at hand. But it often happens that the engineering technique is made to take over and serve as the prime expression for the building without sufficient regard to the overall intent of the program.

Experienced and thoughtful architects undoubtedly have developed a sense of what sort of atmospheres are most appropriate for different situations. The crucial step that follows, however, is in properly interpreting this to the lighting engineer. Some architects and engineers have suggested that an approach to this is thinking of space in terms of brightnesses as well as textures, and expressing lighting in drawings that will be meaningful to the engineer. Even so, since lighting is so subjective in its influence there is little doubt that architects don't have available to them sufficient information on emotional response to lighting stimuli. In a general way, maybe they do: warm and cool, advancing and receding colors, etc. Certainly a feeling of well being is just as important as is the physical ease of seeing with which tasks can be accomplished—but how to achieve this must wait to some extent for better information from the psychologists and their confrères.

Another hindrance in the way of more "quality" in lighting is the manner in which lighting equipment data is presented to the architect. Distribution curves can be used successfully by the engineer to obtain prescribed footcandle levels on room surfaces. Unfortunately this type of information means little to the architect. It doesn't tell him what sort of patterns of brightnesses and shadows will occur when a certain type of fixture is used on a particular spacing and installed in a particular way.

All in all, the fact remains that light can make a much greater contribution to building design than it has made. And just as other technical areas, such as acoustics, have been incorporated into the building vocabulary, so it is time now that light begins to work positively.

Courtesy N. Y. Public Library

Architects of Hellenic Greece were conscious of how bright sunlight could give sharp modeling effects by narrow flutings on columns

Architects of medieval cathedrals designed structural tracery of stonework to allow soft daylight of their climate inside

Ely Cathedral, England, photo by A. F. Kersting

By Derek Phillips, A.R.I.B.A. and Lighting Consultant, London

Architectural Design Factors

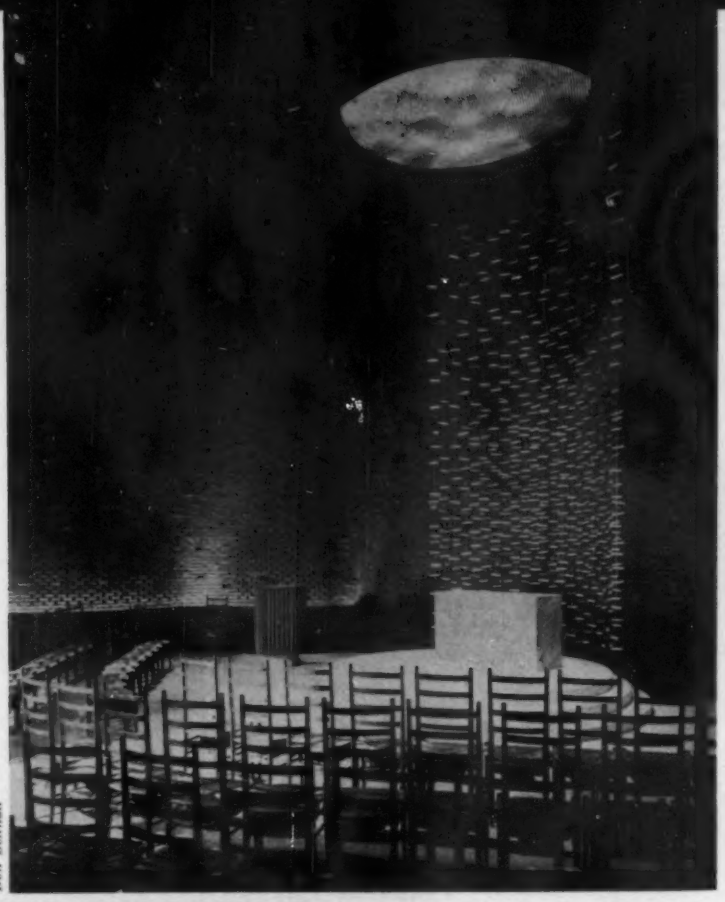
A work of architecture is governed by a number of "design factors" which have various degrees of importance in different architectural programs and in different localities, and have been given different emphases throughout history. Some of these factors may be basic to the design, while others may be only of passing or local importance.

Included among these factors are the satisfaction of man's physical needs (such as space, heat and light) and his intellectual and emotional needs (such as unity and variety, proportion, scale and color). Lighting is certainly *sine qua non* for the latter group, because although lighting enables the building to be used through man's senses, it should also contribute to appreciation by his mind.

In almost all cases design factors have been given varying importance throughout history, and it can be demonstrated that different sets of conditions determine the weight which is attached to any one of them at any particular moment. However, the factor of lighting has been regarded as important in almost all periods of history. In Hellenic architecture bright natural light was utilized to gain heavily etched modeling from comparatively shallow moldings, while daylight was scarcely admitted into the building at all; an occasional roof opening allowed a dramatic shaft of light to fall on an important statue.

In medieval cathedrals, the structural tracery of the stonework and flying buttresses was designed to allow the softer daylight indigenous to more temperate climates to be admitted to the interior, and the art of stained glass which flowered at this time was carefully related by the architects of the period to the emotional quality of the interiors.

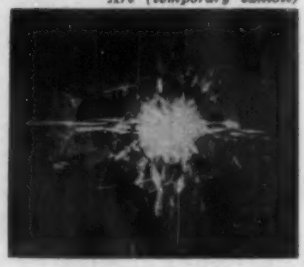
The Baroque period saw the subordination of such factors as structure and space utilization to the sculptural effects of freely molded shapes and space, and the wealth and richness of the architecture can be par-



Ben Schnall

Glitter . . . Form

Courtesy Metropolitan Museum of Art (temporary exhibit)



G.M. photo

Glittering screen in the M.I.T. chapel suggests a Baroque richness which still has meaning in today's architecture

Saarinen's dome of light in G. M. Technical Center (left) is made possible through advances in lighting technique

Sculpture, "The Sun," by Richard Lippold (right, above) has brilliance often suggested by crystal chandelier

Sculptured concrete wall by Nivola in Oliveti showroom shows how light and form can work together

tially accounted for in terms of what can be accomplished by light when daylight openings and candelabra are carefully related to richly molded forms.

Architects have not entirely forgotten the use that natural light can be put to in modern buildings, not only for functional reasons, but to add richness to what is in many cases doomed by modern economics to soul destroying monotony. But electric lighting that is possible today has not yet achieved the maturity which should come when its possibilities are fully integrated with architectural principles. For almost anything is possible in lighting, and what may appear to be advanced systems should be accepted merely as the stepping stones to the future; the run of the mill incandescent and fluorescent schemes of fixtures added to predetermined structures should be considered as more akin to lighting of the gas age.

The fact that electric lighting as we know it was not used as a basic design factor in buildings of other periods, or in a sense may seem "old-fashioned" or inefficient in some more recent buildings now, makes life very difficult for the architect or lighting engineer who has the unenviable job of trying to design lighting for them. Where a building has been designed with no thought of electric lighting, other than that which was a bare minimum to enable a man to pass through in comparative safety, adding lighting to it afterwards can never do more than light it up—in many cases a mistake—and at worst it can completely spoil the appearance in daytime by the addition of unrelated fixtures.

There may be justification for large scale schemes of artificial lighting applied to important buildings of past periods of architecture, where modern custom requires their use at night, but then it is well to achieve sufficient illumination and to reveal the characteristics of the architecture in such a way as to infringe as little as possible upon the daylight appearance of the building.

Louvered grid in Connecticut General Bldg. by Skidmore Owings and Merrill hides fluorescent tubes, ducts and diffusers; provides sound control

In Northport School by Ketchum, Giná and Sharp, dropped ceiling at entrance has fluorescent tube above to light ceiling. Skylight has lamps for night

Same school as above uses wood baffles in front of fluorescents to light display board and corridor. Downlights are in dropped ceiling for entrance

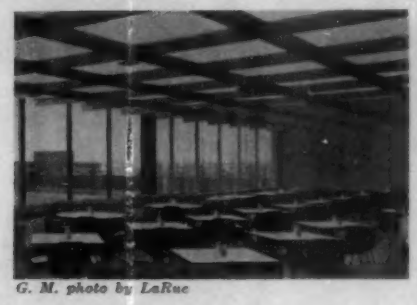
Charles Payne

Ceiling in cafeteria of Northport school has gaily colored fixtures on dropped panels. Fluorescent tubes atop edges of panels light cellular decking above which is bright orange

Wooden grid with lamps behind in Japan Airlines office resembles shoji screen. Junzo Yoshimura, Archt.

Luminous ceiling in dining room of G. M. Technical Center integrates sound baffles with air diffusers

Stainless steel sculpture by Isamu Noguchi is decorative element in lobby of 666 Fifth Ave. Mercury lights make waterfall behind shimmer



G. M. photo by LaRue

J. Alex Langley

Function . . . Decoration

Importance of Lighting as a Design Factor

We have said that lighting is a design factor which must provide for the physiology of seeing and must satisfy the mind (reason and emotion) also. It is important that lighting first of all should be adequate for the task to be performed, whether this is operating a piece of machinery, walking through a building, or even listening to music; and that the lighting should be arranged in such a way as not to inhibit man's visual or other body mechanisms by causing undue strain due to glare. (The provision of adequate illumination, in a manner related to man's body economy, can be considered as straight illuminating and human engineering; these are only the mechanics by which "positive" lighting is achieved.) This article is devoted chiefly to consideration of the less tangible aspects which satisfy man's mind.

To illustrate—even though the richly molded and gilded forms of past architectural styles may not have relevance today in terms of either 20th century economics or design philosophy, the glitter and sparkle provided by the original flame chandeliers satisfied a deep human need; and that this is so, is obvious from the manner in which many present-day lighting fixtures attempt to achieve similar characteristics by means of highly polished and perforated materials.

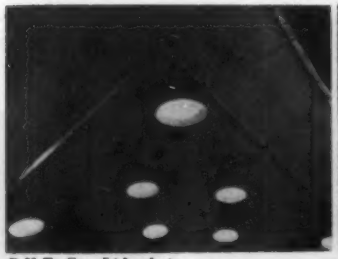
And while the M.I.T. chapel belongs to today's architecture, providing a measure of counterpoint to the larger auditorium, certain features suggest a Baroque richness, one being the metal-leaved sculptural screen at the rear of the altar, which owes much of its success to the carefully planned and executed lighting.

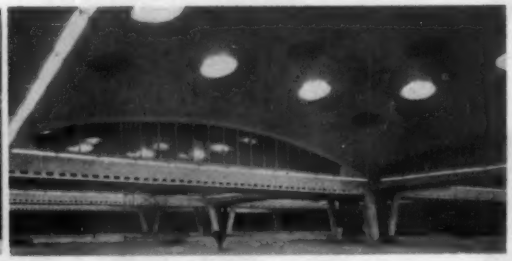
These references are not intended to suggest that essentially all there is to be done is recapture stimuli which had meaning in past ages in new wrappings. Effects can now be achieved in buildings never dreamed of by Michelangelo or Sir Christopher Wren; but had modern meth-

John Maltby F.I.B.P.

Suspended lighting system (often called Rotterdam Ceiling) "lowers" ceiling for a store. Downlights give modeling and accents; uplights shine on panels for indirect illumination

Creating an Illusion

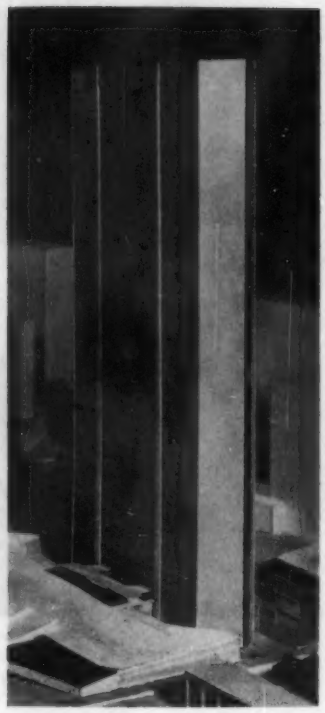




B.H.T. Co., Ltd. photo

Factory in Brynmawr, England has two sets of ceiling openings, with same geometry, one for daylight, the other for electric light. Good example of thoughtful lighting for a thin shell

Architecture for Night and Day



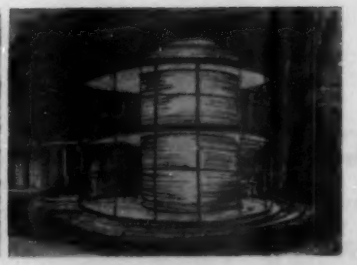
ods of lighting domes been available to these architectural giants, it is certain that they would have used them, and their architecture would have taken them into account. The result would not have been in the same "form" as Saarinen's smooth flowing dome for the display of new automobiles; it would have been related to the cultural and architectural needs of a different age and society, and it would have resulted in a *different* architectural form in which artificial as well as natural lighting were carefully considered.

Thus it is possible for new forms to be evolved today related to the light sources available: they might be sculptured concrete walls, strong in compression, light in feeling, which have a textural and esthetic appeal over and above their structural qualities, which varies in relation to the lighting.

The Positive Use of Lighting

Up until this point the principles and objectives of "positive" lighting have been discussed, sometimes in abstract terms, along with historical references which indicated the influences that caused lighting to be a design determining factor. To further amplify what is meant by "positive" uses of light, a number of contemporary examples will be illustrated and discussed. It might be possible to infer from what has already been said that "positive lighting" as a design philosophy applies only to the more dramatic situations, where appearance is primarily an esthetic consideration; this, at least, is where lighting design weaknesses are most prominently exposed. But positive lighting as a concept can apply to any lighting situation—office building to concert hall.

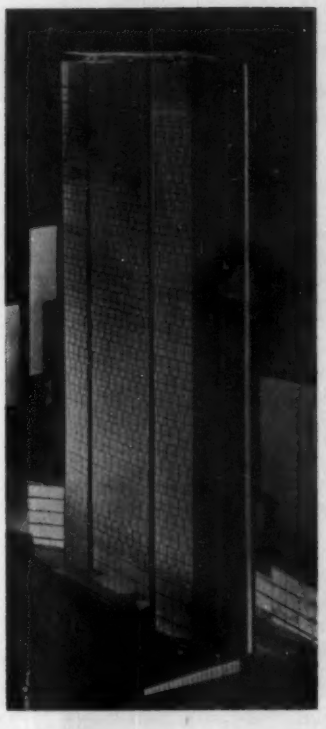
This is demonstrated in the Northport, L. I. school by Ketchum, Giná and Sharp, where the corridor has lighting which serves both function and effect. A dropped ceiling with recessed incandescent light has been put at the entrance to emphasize this fact (it contains a diffuser and conceals ducts as well). A plastic sky-



Proposal for gasoline station (above) by the author considers how light can enhance its form, day and night

Seagram's Building now glows at night on the New York skyline. Perimeter of each floor is a band of light

Maurey Garber



Gio Ponti speaks of the night appearance of buildings as the "second aspect of architecture." It is exemplified in the Pirelli Bldg. (left)

Johnson & Johnson plant by Walter Kidde has special lights shining at random on white brick panels—a big improvement over "floodlighting"

Joseph W. Molitor

light over the locker area has fluorescent tubes above it for night use. Along the side walls are shielded fluorescent tubes which provide both light for the corridor and the display board as well.

One of the most difficult jobs for the architect and lighting engineer is the coordination of lighting with the many structural and mechanical components required in the ceilings of office buildings. The needs of structure, noise reduction, lighting, heating and cooling, and sometimes fire protection devices, as well as telephone and sound systems must all be coordinated. The "design" solutions to this problem can be either very good or very bad. Materials and equipment are available to permit commendable designs, but the quality of the result rests in the ingenuity of the designer.

In the category of suspended ceilings (using the term somewhat loosely) it is possible to create the illusion of a lowered ceiling through lighting. For instance, the apparent ceiling height can be reduced by using a simple wooden framework in which the lighting is incorporated, giving emphasis at a low height where it is required. This is carried to an extreme in the "Rotterdam Ceilings" so popular now in shops and store lighting.

Lighting equipment itself, whether a window to let in daylight, or a luminaire, has its own appeal over and above the lighting job it is called upon to perform.

The ceiling has been a traditional position for decorative effects, whether the painted ceilings of the renaissance or the plastered ceilings of English country houses. The functional effect of the lighting in these installations is less important than the appearance of the ceiling related to the whole design of the room.

"Second Aspect" of Architecture

In the same way that natural light reveals the physical form of a building by day, so the artificial lighting must be used positively to create a definite impression by night. It is

important for an architect to ask himself whether he wishes the night impression to be similar to that by day, or whether for some valid reason this may be altered. An example of this might well be in a restaurant where, during the day, an even illumination over the room suits the mood of the daytime customer, but at night moods change and a more intimate atmosphere needs to be created in which the customer finds himself to some extent isolated in his own little circle of light. Other cases where light can be changed are shops and stores, theaters, etc., where the emotions can be stimulated differently according to the time of day.

In general it is true to say that the nighttime impression of a building should be consistent with the daytime one, at least to the extent of aiding recognition by expressing the essential form of the building.

(The Seagram's Building in New York will be lighted the same day and night by a luminous plastic band in the ceilings which runs around the periphery of the building. During the daytime, the illumination will be 100 ft-c maintained, and at night this drops down to 25 ft-c, except where someone may be working, and then the full illumination can be left on. Philip Johnson, commenting on this design, said that the architects didn't want the building to look as though it were the open mouth of a person who had some teeth missing.)

The "appearance" of a building by night has been described by the Italian architect, Gio Ponti, as the "second aspect" of architecture, worthy of as much consideration as the appearance by day. This concept would have been impossible as little as 50 years ago, but with the lighting we now have, it is quite acceptable.

A theoretical example of how this might be done is shown in the two sketches for a gasoline station. The daylight form is a solid brick cylinder surrounded by a glass screen, with two floors through which the brick cylinder passes. During the day the underside of the two floors is dark against a light background seen through glass, with the brick cylinder slightly lighter due to ground reflection. At night the form of the building can be revealed by making the undersurface of the floors light against the dark background of the night, while the cylinder is lit to a slightly lower brightness. To carry the effect to its conclusion, the top of the brick drum on the outside should be lit to an intensity similar to that inside—a real reason for what is generally thought of as external floodlighting. Perhaps a more appropriate example of doing this might be to allow the internal light to flood upwards by leaving a gap between the brick drum and the roof, filled in with glass or plastic. By this means the shadow patterns are reversed but the form of building as revealed by artificial light corresponds to the daytime experience.

The railway station of Rome is a magnificent example of this feeling for the night appearance of a building which must of necessity be used at all hours of the day. The way in which the lighting has been integrated with the original concept of the form shows distinctly that there is already an awareness on the part of some architects of the importance of this new design factor.

Gio Ponti shows in his new office building for the Pirelli Company that even in the very practical problems of this type of space the lighting factor should be considered. This building answers the complicated problems of structure, planning and services, but it goes further than this in appealing to our emotions in a "formal" sense. Daylight is admitted to the building by glass walls oriented to suit the climatic conditions and the internal accommodations, and at night these glass walls form a very positive visual impression when lit from inside. In addition to this, the service elements, staircases, etc., have been grouped at each end of the building in such a way that when lit at night, the resultant pattern contributes to the "second aspect" of architecture in achieving an architectural unity—different from, but expressive of the daylight impression.

This is an entirely different concept than the floodlighting of buildings from the outside which can surely only have validity when the purpose of the building is such as to require emphasis for commercial or other reasons at night, without the building being in use. In modern buildings the large areas of glass make the general use of this form of lighting almost impossible since the inside and outside space is so closely related. The inside of the building often can be seen clearly and the building must be acceptable from the inside as well as the outside. The lighting must assist in unifying both.

The problem facing the architect is how to do this in a way in which the lighting equipment itself does not conflict with either the daytime or nightime impression. The latter is more a problem of technique and the lighting engineer together with the architect should be able to solve this, provided the architect knows what he wants to do, and the lighting engineer is capable of understanding the idea and executing it.

New Structures and Lighting

Many new forms of structures are being made possible by developments in engineering design and new materials. These have led to the use of new structural systems employed with tremendous enthusiasm and very little thought for other factors —and lighting is surely one of them —which are of importance in the creation of a building to satisfy all man's needs.

Early shell concrete buildings illustrate this point very clearly, for with this new tool the architect gaily went ahead and designed shell concrete buildings in which no provision was made in the structure for heating, ventilation or artificial lighting, and when the building was completed, the beautiful simplicity of the shell lines was spoiled by all manner of apparatus and contraptions suspended anywhere they could be fitted in.

This didn't happen in a factory at Brynmawr, England, where the architects designed the shell roof to accommodate openings for both daylight and artificial light. The lighting for factory processing comes from the same direction both day and night, and has broadly the same geometry so that functionally it meets man's needs, as well as appealing to his sense of order.

In the brilliant engineering of Nervi, a new structural esthetic seems to be found, a joy of structure for its own sake, and it seems almost a pity that because the Turin Exhibition has to be used at night, it was necessary to add the lighting in long lines across the structural member—instead light might have been worked into the undulations, so that their integrity was maintained at night too.

Two Shelters Admit the Open Air

In Connecticut: Open-Air Theater Sheltered for Summer Music

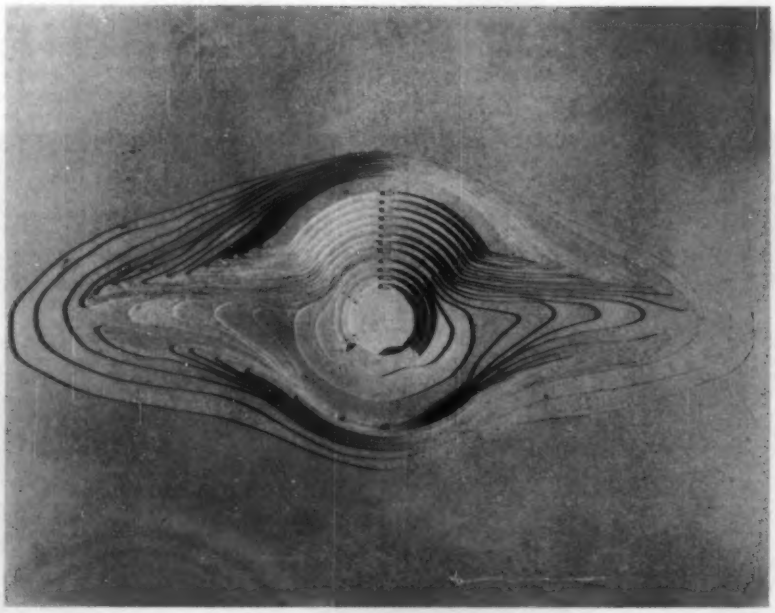
Chamber Music Amphitheater, Westport, Conn.; Architects: Davis, Brody & Wisniewski

A shelter, whatever its function in regard to the elements, may not be a shelter when it is intended to leave the sheltered with some feeling of being out of doors. This amphitheater, designed for Pro Musica, Inc., a Westport, Conn., group which sponsors summer chamber music concerts, was conceived with just such a thought in mind: it was desirable to preserve the open-air aspect of the concerts, but at the same time it seemed provident to have some shelter from sun and rain.

Given a six-acre site of flat land, the architects have designed an "eye-shaped" piece of land-sculpture effected by cutting and filling the earth into embankments which rise in the center, on one side to form the seating, on the other to be behind the performers, and to provide a neat place for tucking away service and rest room facilities.

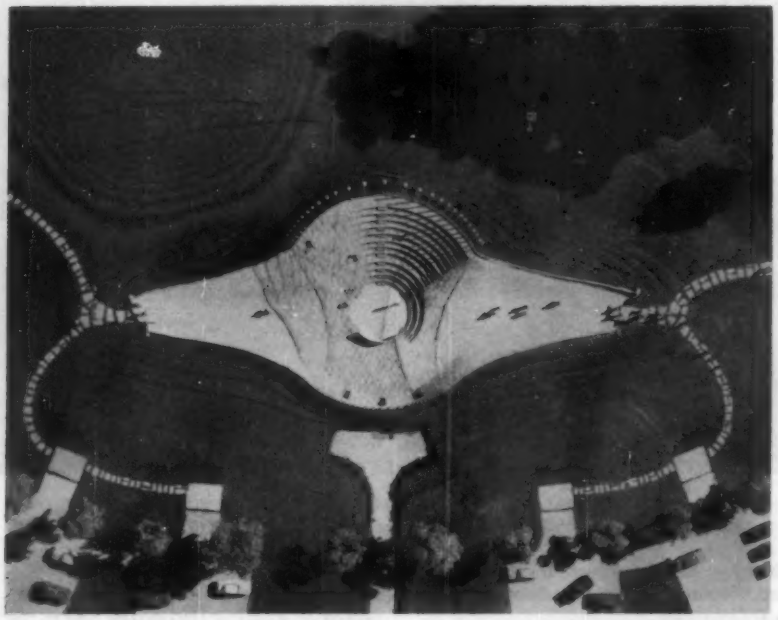
Seating, which will accommodate about 300 listeners, will be arranged in a bank of steep risers curved around a 120 deg angle; this combination of height and curvature will, it is hoped, give the audience both good vision and the sense of intimacy needed for outdoor music performances.

The covering over the theater will

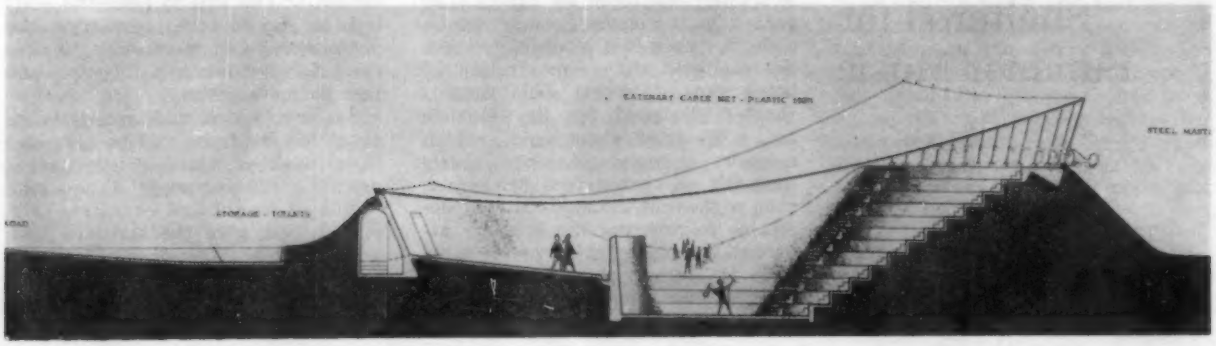


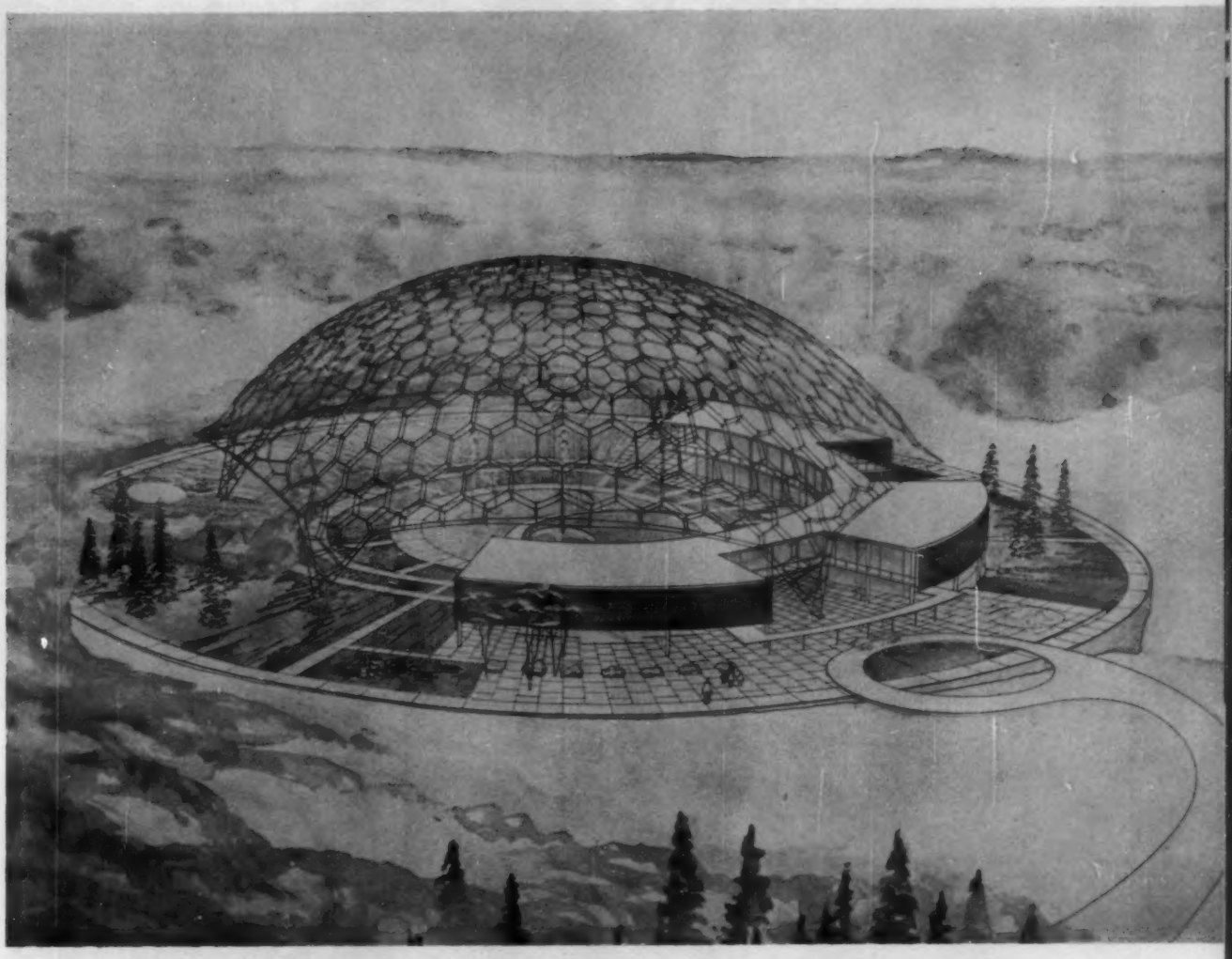
be constructed of a net of cables deforming to a warped catenary shape. It will be fixed to the embankment behind the performers, and attached to counterbalanced masts behind the seating; the counterbalances will be sculptured designs. It has not been firmly decided whether the covering will be plastic or canvas.

A paving of rubble stone over the surface of the amphitheater will separate visually the interior from the exterior, which will be sodded.



Top: topographical model of the "sculptured-earth" amphitheater. Center: the amphitheater with net of cables; at the top, the counterweights mounted on masts behind the seating; in the center, a sounding board will reflect sound up to the listeners; at the bottom, the service road leads into an underground receiving entrance. Below: the skin in place; seating tiers will be wide enough to accommodate folding chairs or permanent benches





In Ohio: A Geodesic Dome, Without Cover, For Metals Society

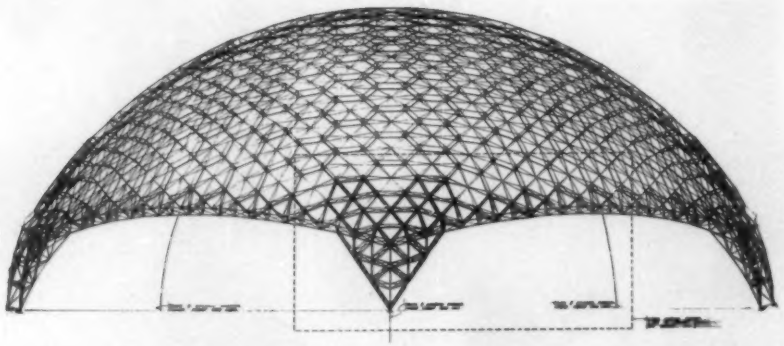
Headquarters, American Society of Metals, Cleveland; Architects: Kelly & Kress; Dome by R. Buckminster Fuller, Synergetics, Inc.

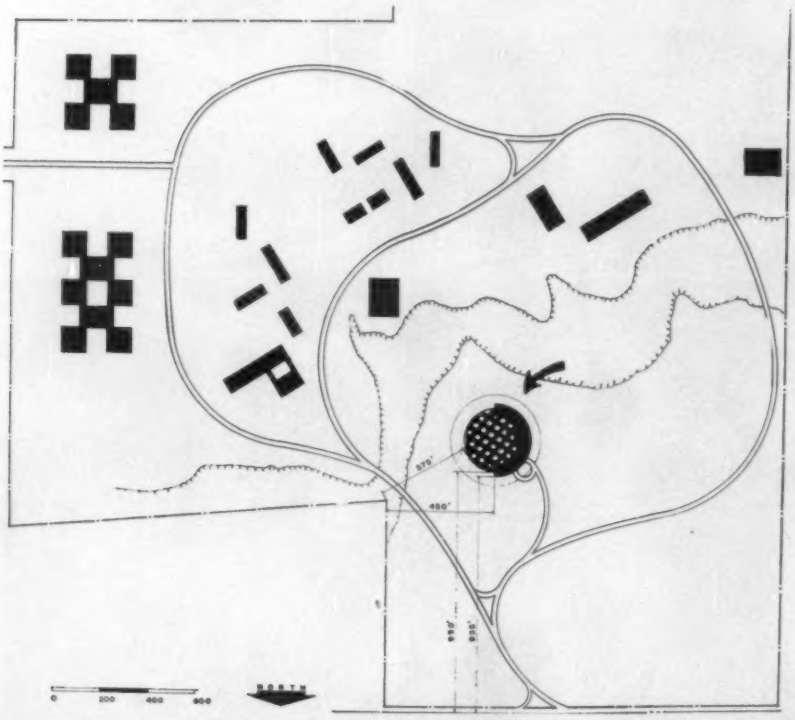
A shelter may not be shelter, either, when its function is purely visual and has nothing at all to do with keeping out the weather.

The geodesic dome shown here will cover, if not protect, the headquarters of the American Society for Metals, being built in the country near Cleveland. The society hopes that it will demonstrate the versatility of metal as a building material—it will be built of aluminum tubing.

In plan, the development will be a series of concentric circles: first, a 400-ft "garden piazza," or terrace; inside this, the 250-ft dome, and the semi-circular office building; and in the center a 100-ft "mineral garden." The dome, dubbed by the architect a "space lattice," will actually be a double dome composed of 11-ft hexagons—a departure from Fuller's usual triangular components. To erect the dome, a system of plastic balloons will be inflated to act as a cushion on which the dome will be assembled. The structure, weighing a total 166,000 lb, will be supported on five pylons, two of which will descend into courts of the building proper. The pylons will be set in concrete footings.

The headquarters building itself

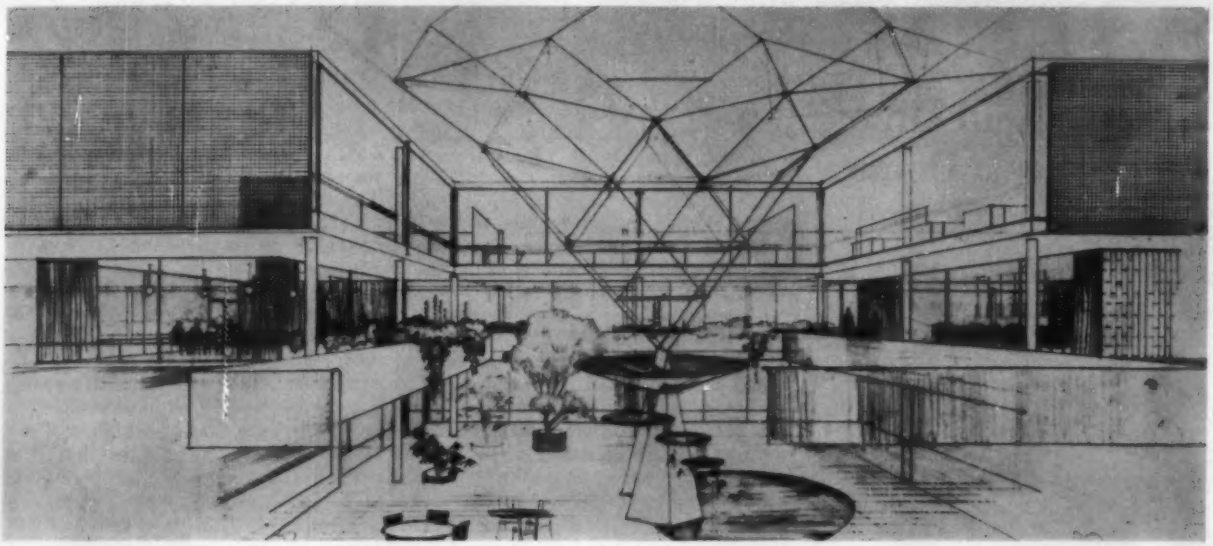




will be built in three levels in a 168 deg semi-circle. Accommodating the 90-member staff of the society, it will contain offices, a library, conference and assembly rooms, and a dining area. Structure will be reinforced concrete slabs mounted on exposed steel columns; around the third level and at the ends of the building a copper screen will dim the glare of the western sun while still allowing clear vision, and will offer the society another opportunity to display the uses of metal.

To cost $2 million, the building is scheduled for mid-1959 completion.

Top: designer's drawing of double dome. Center: headquarters building (circular building in lower right) is the first in a $20 million building program projected by the society, to include classroom and laboratory buildings spread over the rural site. Below: one of the courts, with dining area in wing at left; pylon in this court will be a stainless-steel sculptured fountain, tiers of basins forming a "waterfall"



Fred Winchell photos

STRONG EMPHASIS ON PRIVACY

Residence for Mr. and Mrs. Marc Demoustier
Houston, Texas
Bolton and Barnstone, Architects
Walter F. Moore, Structural Engineer
Florence S. Knoll (Knoll Associates), Interiors
Thomas D. Church and Associates, Landscaping

Privacy for each member of the family is not too easy to achieve when there are five children, but in this well-disciplined and spacious residence it has been accomplished. The parents' rooms (a duplex suite consisting of bedroom, sitting room and bath) are removed from the main activity area, but not so completely isolated that control of and contact with the children are lost. For the children there are four bedrooms, a large playroom and an enclosed patio. The servants' quarters are wholly separate, combined with a three-car garage.

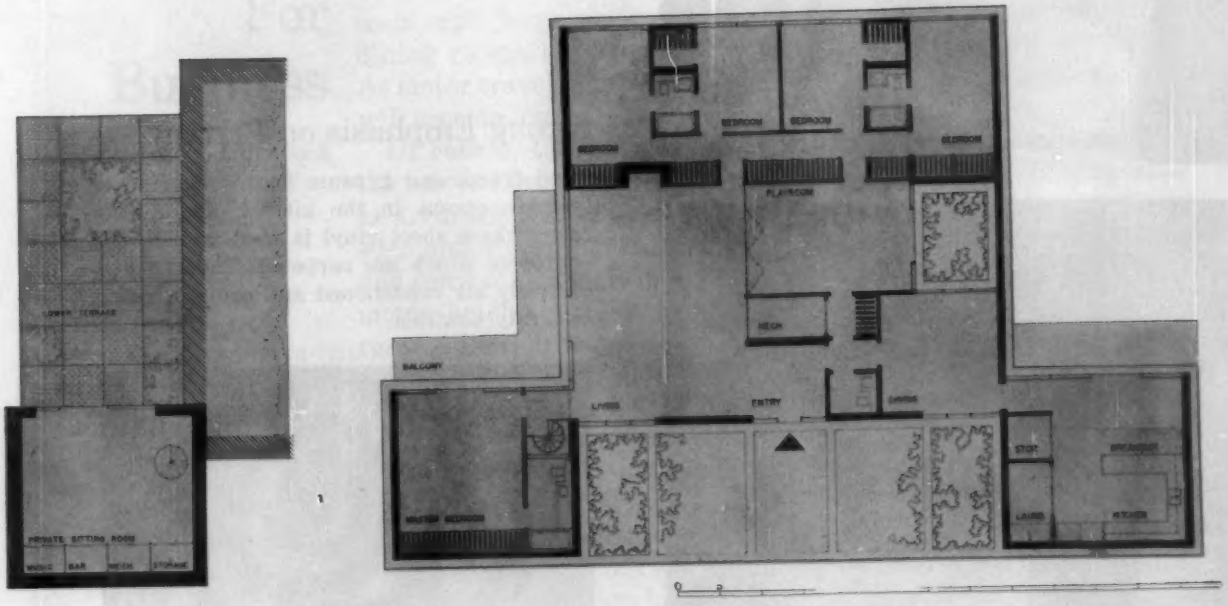
The house occupies a site of approximately three acres, heavily wooded and in a fashionable residential area; to the east, some 30 feet below the site level, is a Gulf

Strong Emphasis on Privacy

Coast bayou which provides the main view, toward which the house is oriented. Living room and master bedroom on the upper level face the view, as do the parents' sitting room and terrace on the lower level.

The architects consider this one of their very best houses. It obviously was designed with careful attention to every detail and without too much budgetary consideration, and was planned for the best possible use of the site. Set well back from the main thoroughfare, it is approached by a long road which winds through the trees and thick underbrush.

Construction is steel frame on concrete slab with exterior walls of cavity brick in natural finish; the upper structure is a steel frame composed of 5-in. angle supports with a standard 12-in. fascia beam which encircles the building and supports the wood framing of the roof. Interior partitions are


BEDROOM
BEDROOM
BEDROOM
BEDROOM
PLAYROOM
DECK
BALCONY
LIVING
ENTRY
DINING
STOR
LAUND
KITCHEN
LOWER TERRACE
PRIVATE SITTING ROOM
MUSIC
BAR
DECK
STORAGE

Strong Emphasis on Privacy

wood frame and gypsum board; flooring is terrazzo except in the kitchen and dining room where sheet vinyl is used, and in the bedrooms which are carpeted. The house is centrally air conditioned and equipped with humidity controls.

MOTOR HOTELS

As Building Business

By George Cline Smith
Vice Pres. and Economist, F. W. Dodge Corporation

The casual motorist may well wonder if there is enough business to support the seemingly endless lines of motels along our highways. On the other hand, the summer tourist who vainly searches for a vacancy wonders why motel building has failed to keep pace with the growing volume of motor travel.

The postwar period has seen an astonishing increase in the use of automobiles. The number of passenger cars has more than doubled since the war, and speedometers are clicking off more than 500 billion miles a year. Inter-city travel by car is now at more than two and one-half times the highest prewar rate.

Motel building has struggled valiantly to keep up. Dodge figures indicate that construction contracts for new motels in 1957 totalled $161 million, an increase of 10 per cent over 1956. The heaviest concentrations were in the southeast and far west, but all parts of the country shared in the motel boom.

All indications point to a continually expanding motel market. The trends toward a shorter work week and increased real incomes will result in more leisure time, as well as more time for recreation and travel. Improved highways add immeasurably to the attractions of motor travel for business and pleasure, and better facilities—such as inviting motels—generate more traffic. The new interstate highway program will add enormously to the need for enlarged, relocated and especially for additional motels during the next decade and probably for longer.

As Architecture For Business

By James S. Hornbeck

Every business must grow; and the logical way for the hotel business to move is sideways—toward the motel. The traditional large, central-city hotel finds itself in an increasingly untenable position, with suburban and highway hotels taking growing bites of its income from outside—while increased taxes, high labor costs, and large non-profit areas (elaborate ballrooms, lobbies, dining rooms, etc.) are nibbling away at its money from inside. As motor travel increases—and the experts tell us it will—the bite will become bigger.

Of course, the large downtown hotel has its advantages; but the newer kind of motor hotel seems to have more—profitwise—as architect William Tabler explains on the following page. Even such historic functional prerogatives as banquets, meeting rooms, and convention facilities are moving from the city into suburban motor hotels; while highway hotels—assuming a more festive, resort-like character—are building up a heretofore non-existent weekend and vacation business.

In this study we will consider the motor hotel in several of its architectural and operational manifestations: the franchise chain, the large hotel corporation chain, the suburban motor hotel, the resort, the community venture, and a sparkling new idea by Rufus Nims for a low-cost manufactured unit that will be delivered to the site—as is your car—complete with wall-to-wall carpeting and built-in ashtrays!

The Economic Facts of Life About Hotel Design

An Interview With
Architect William B. Tabler

Unlike most businesses, the hotel business makes its money from a building. It operates on a small profit margin, selling its product daily. Travelers demand three things—food, lodging, and entertainment—and the hotel furnishes them. On the average the profit ratio, on an individual sale, runs about as follows: on rooms, 70 per cent of income; on liquor, 50 per cent; on commercial rentals, 15 per cent; on food, nothing. Yet when one builds a hotel building, 65 per cent of the cost goes into public and service areas and 35 per cent into rooms. Economically out of balance? Yes, but the non-profit areas must be there in order to rent the rooms, for rooms alone fail to meet those three demands.

The motor hotel—in which rooms comprise a relatively greater percentage of building area and cost—operates at a higher profit rate per dollar invested than downtown hotels. The big chains know this, of course, and are all working their way into this newer market in one way or another. Additional tempting aspects of the motor hotel: the informal, do-it-yourself atmosphere (less labor, less tipping, no garage); cheaper land; lower taxes; less restrictive building codes; fewer labor regulations. Hilton, Sheraton, Knott, and Hotel Corporation of America are turning to the motor hotel as a logical field for growth.

I know of no extensive research program into motor hotel design, and am currently conducting my own. Rules of thumb for cost analysis are useful, but can be used against you if not understood. Please understand that the following *are* rules of thumb, derived from extensive hotel study, and bear in mind that each one influences the other.

First, room construction cost (the finished, unfurnished shell) should not exceed $1,000 per $1 average room rate. Second, the cost of the land should not exceed 10 per cent of the cost of the building. Third, the number of necessary employes should not exceed the number of rentable rooms. Fourth, bedroom areas (i.e., total typical floor areas) should be at least slightly larger than public and service areas; and the more the better—conditioned by those basic three demands again! These rules of thumb are predicated on a 65 per cent occupancy break-even point.

Years ago Mr. Statler found that a commercial hotel in a city must contain at least 1000 rooms in order to achieve a proper balance between profitable and non-profitable areas. This principle lies in back of the recent non-building of large city hotels, and as costs of land and taxes and labor increase, it is more forcefully true. As of now, optimum size for a motor hotel is a new problem requiring study. Additional problems in motor hotel design which require analysis and study are: percentage of land coverage; covered versus open parking; means of control.

An interesting possibility occurs when one considers the Howard Johnson operation. In like fashion, the services of a large commercial hotel in the center of a city might be utilized profitably to service several satellite motor hotels within driving distance. Non-profit activities such as administration, food commissary, bakery, the supply depot for linens, china, etc., laundry service, valet service, maintenance shops, etc., could serve double duty for the satellites. This would help justify their expense from two directions, and make both the central hotel and its satellites more profitable ventures.

Design For A Franchise Chain

The Newest Howard Johnson Motor Lodges

Carl Koch & Associates, Architects
Text by Carl Koch

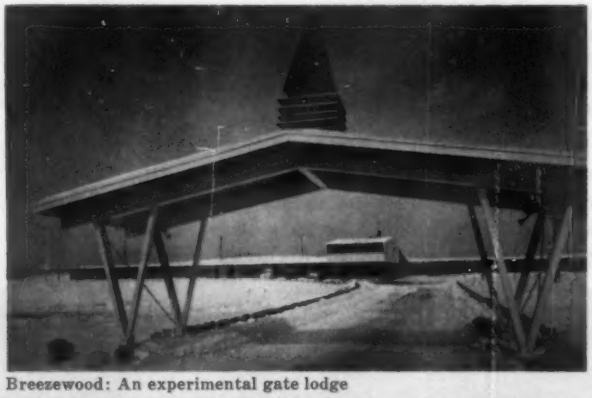
***Ed. note:** Two of the newest Howard Johnson motels, those at Breezewood, Pennsylvania, and Ridgefield Park, New Jersey, are shown to illustrate a part of the work Carl Koch had been doing for that chain before they mutually agreed to call it quits.*

There are four typical room types in each project: A, with twin double beds; B, with twin single beds; C, a studio apartment; and D, with one double bed. Usually, 50 to 70 percent are of B and C type, since they are the same size and can interchange furnishings. In resort locations, however, there is increasing popularity for the A type, since a family of four can occupy it nicely. The D room is most popular in business and industrial areas, where demand by salesmen and engineers runs high.

One of our first suggestions upon being retained was for a program of basic research into room types and combinations, kinds of furniture and interior decor, the design of a standard gate lodge, study of a proper signature for the highway, and determination of specific site planning principles for the entire program. Unfortunately, funds were not available for such research, but we did work out a standard room which has been used, with minor changes only, throughout their building program.

In working on these Howard Johnson projects we came to many conclusions about the American motel. First, a list of principles we were able to apply to the Johnson chain, many of them worked out in collaboration with Rufus Nims, architect, R. H. Dwinell of Howard Johnson, and John Woodard of Contract Interiors.

One point of advertising and control close to the highway—the gate lodge. This was to provide an inviting porte-cochere and drive-up window, an indoor registration desk, small office, meeting room, and public rest rooms. The Breezewood lodge shows early experimentation and an attempt to include a manager's apartment on the second floor. The Ridgefield Park lodge is a later development reflecting the



Breezewood: An experimental gate lodge

The plot opens up at the back

All photos by Joseph W. Molitor

Breezewood: We tried the manager's apartment over the lodge

One-story units widely dispersed

Johnson philosophy of trying to relate the gate lodge to the restaurant by means of similar orange roofs and cupolas on both.

Wherever possible the site arrangement was to present the project attractively from the highway. We all agreed on this principle, but our ideas in achieving it were often at variance with those of the operators and the Johnson organization.

The business of driving to one's front door, unloading under a sheltered walkway, and going directly indoors was heartily agreed upon and generally well executed in the designs. The covered walkways between buildings provide both shelter and a strong visual tie between units. Should they be eliminated in future projects for reasons of economy, I feel the design will suffer as a result.

First impressions upon entering the room are important in rentals, and here we designed a screen that allows a partial view of the furnishings and large patio window beyond. The guest finds—upon entering—two built-in luggage racks and a coat closet. He may place his articles in drawers or upon shelves. We all favored shelves since most travelers live out of their suitcases and may leave behind things stowed away in drawers. An outside dressing area with large mirror, counter, and lavatory is provided in all but D units. Adjacent this is the bath with similar lavatory and mirror, two shower heads (high for "him" and low for "her"), ample towel racks, hooks, and other accessories. The two lavatories and shower heads are aimed at setting the Johnson chain apart from competition.

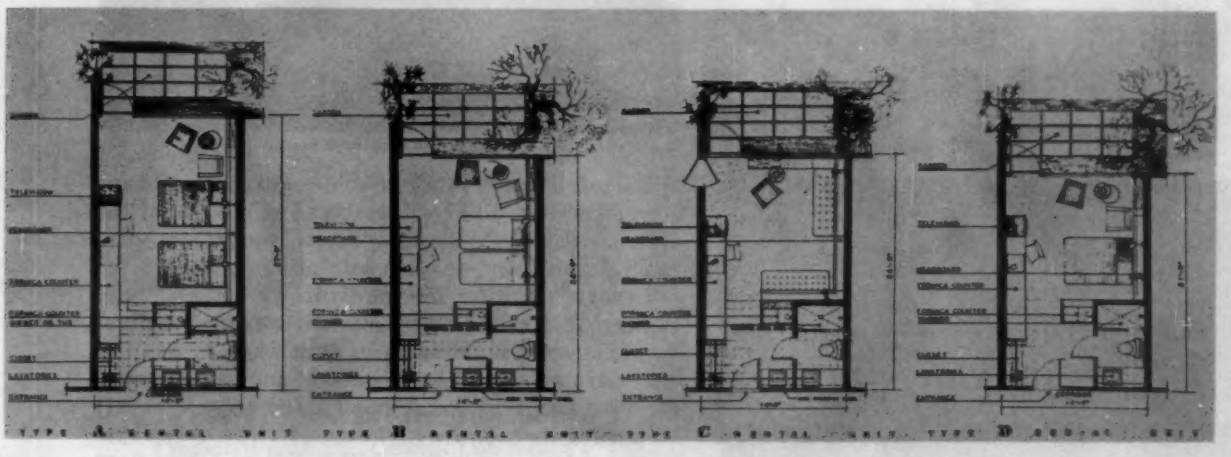
Traffic flow works thus: from car to luggage rack to dressing-bath to bedroom-sitting with a private view over patio to lawn in back. The furnishings were worked out with John Woodard and Rufus Nims. There are gimmicks in the room: sloping headboards for luxurious reading in bed, TV opposite the bed

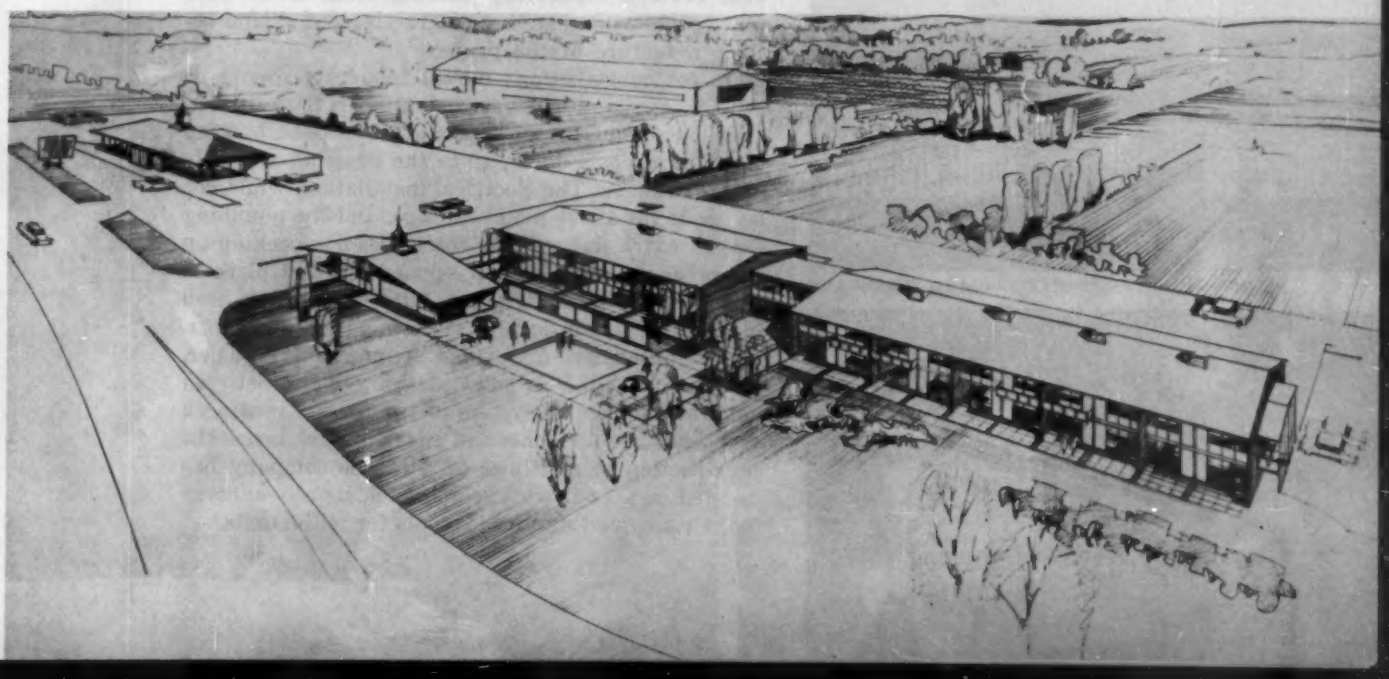
Ridgefield Park: The screen allows a glimpse of the room,

its furnishings, and the large patio window beyond

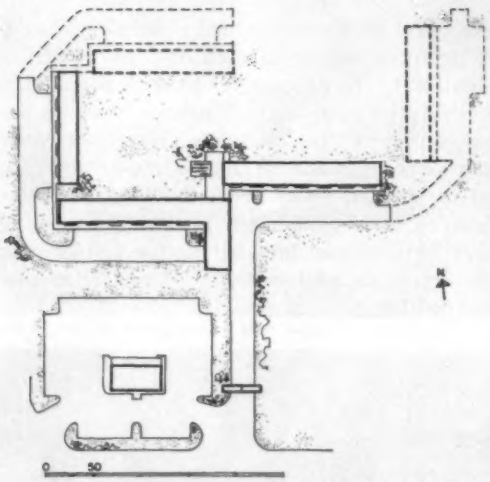
for lazy viewers, luggage rack, desk, and TV counter in one continuous plastic-topped counter. The colors are on the somber side to add dignity and restfulness.

As for site planning, we hope—but are not sure—that we have made the Johnson organization conscious of how important it is to make the most of a difficult terrain. At Breezewood, there is a narrow bottleneck approach between a Howard Johnson restaurant parking lot and an obscuring weed-covered bank. This alley led to open acreage about 300 ft back, upon which the owner wanted one-story buildings. The problem was to stretch out the buildings to call attention to the project yet provide something high to relieve the monotony. We hope the site arrangement answers the question. Here we were able to keep parking roads on the perimeter and face the patios inside and away from the highway. The danger in such an arrangement is that the passing tourist may never know how attractive the project is until he drives up and walks through. Time and landscaping will help.

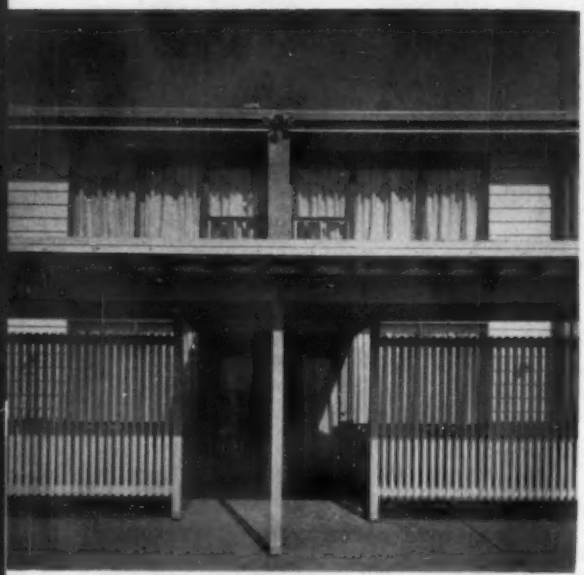




Motor Hotels: *Howard Johnson*



Plot plan for Breezewood



Ridgefield Park: Two-story buildings on valuable land

Ridgefield Park: Luggage rack and screen at room entrance

Ridgefield Park: Interior of the gate lodge reception lounge

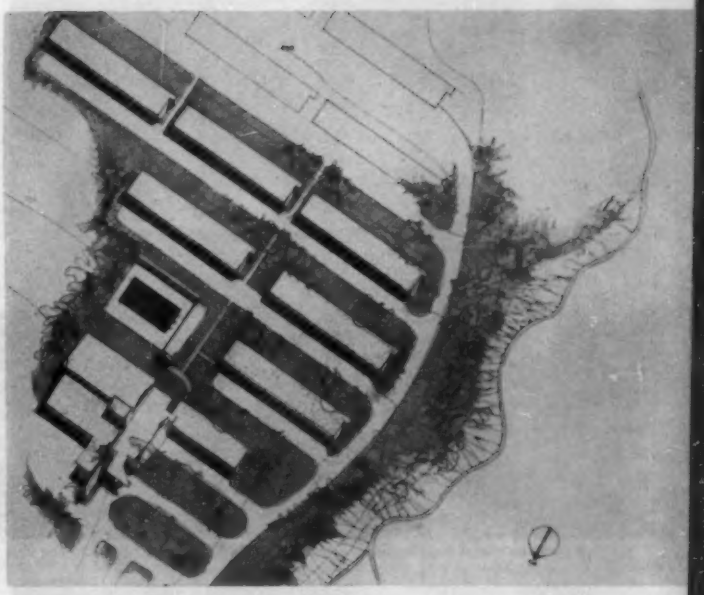
Ridgefield Park illustrates the opposite problem: a handkerchief piece of marshland at the end of the New Jersey turnpike, worth its weight in gold. High density was an economic necessity, hence the two-story corridor scheme with the grass strip between, set back as far as possible from the highway. Since the building faces both ways, it was felt that parking should be in back because of the need for advertising whatever small green areas were left by placing them on the highway side. The little Japanese gardens separating parking from lower floor rear rooms will make these attractive and should become a feature of the project.

As for construction: we all felt costs should be kept as low as possible consistent with the program envisioned. The greatest problem has been to keep mechanical costs down, since the projects are fully air conditioned. The electrical installation, while not lavish, is far above motel average, and the plumbing —with extra fixtures—is costly despite backing-up wherever possible. Thus it seemed the best place to cut costs was in the structure, but the effort has been in the direction of durable materials to minimize future maintenance and make soundproofing easier. This has resulted in solid masonry walls between units and a regular system of beams and roof deck overhead. Despite concerted effort to modularize the construction in multiples of 4 ft, the company has insisted on a 14-ft-wide room which strictly adheres to their accepted standard layouts for rental units.

A Unique Community Motor Hotel

San Pedro Hacienda
San Pedro, California

Richard J. Neutra and Robert E. Alexander, Architects
Dion Neutra, Howard Miller, Robert Pierce, Collaborators
Glen Kirk, Interior Designer
Parker, Zehnder & Assoc., Structural Engineers
Henry G. Soto, Landscape Architect
Crowell-Wilson Co., General Contractor



This handsome community center and motor hotel—entirely financed by over 4000 citizen stockholders plus the usual loan—is proving to be a great success, both esthetically and business-wise. Several years ago the need was clear: the seaport of San Pedro required a hotel for business visitors and tourists as well as a center where citizens could hold club meetings and entertainments, view art and commercial exhibits, attend conventions, etc.

The man of action back of the development was Charles Soderstrom, an automobile dealer, who enlisted several other businessmen and a citizens' group to push the idea into reality. A 50-acre sloping site commanding a panoramic view of the harbor and sea was acquired; a consulting firm, Hockenbury Associates, was retained to conduct a feasibility survey, recommend the number and type of rooms, and master-mind the financing. The decision was for a motor hotel with a resort—or country club—

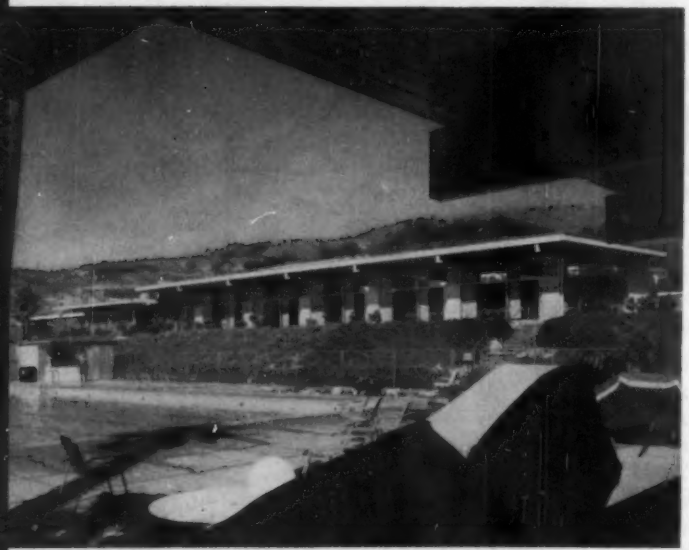
Motor Hotels: *San Pedro Hacienda*

Main entrance marquee for weather protection

Each room opens to an outdoor sitting space with an ocean view

All photos by Julius Shulman

From the social hall and restaurant, the slope descends toward the sea

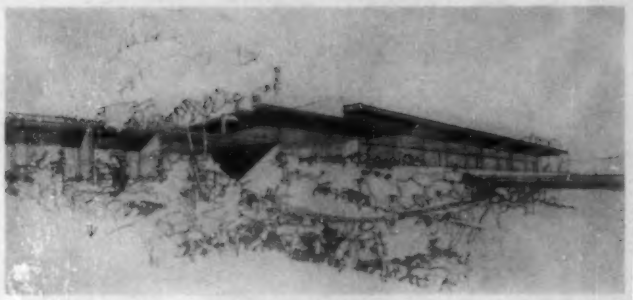


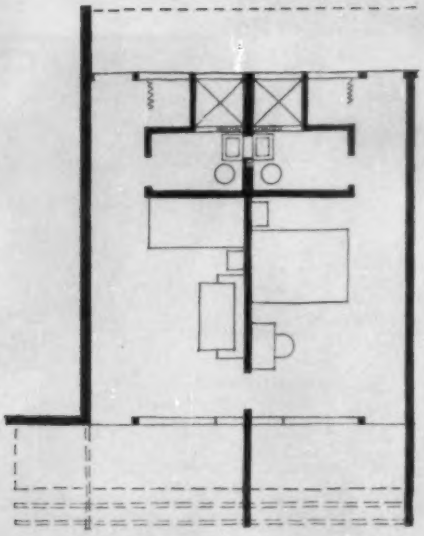
Looking across the pool to the social hall, with the hills as backdrop

atmosphere, and architect Richard Neutra has interpreted that thinking into an interesting and attractive scheme. As the plot plan shows, the rooms are arranged in groups stepping down the slope and are surmounted by the core building (social center) and pool immediately up the hill. Because of the slope, every guest room and all other principal rooms and areas have an ocean view. A golf course adjoins the hotel on down the slope. A driveway links the units and enables every guest to park his car behind and adjacent to his room.

In line with the general air of informality, the hotel is operated with a minimum of personnel and waste. Wherever possible, guests are given the opportunity for self-service, although hotel service is readily available if they prefer.

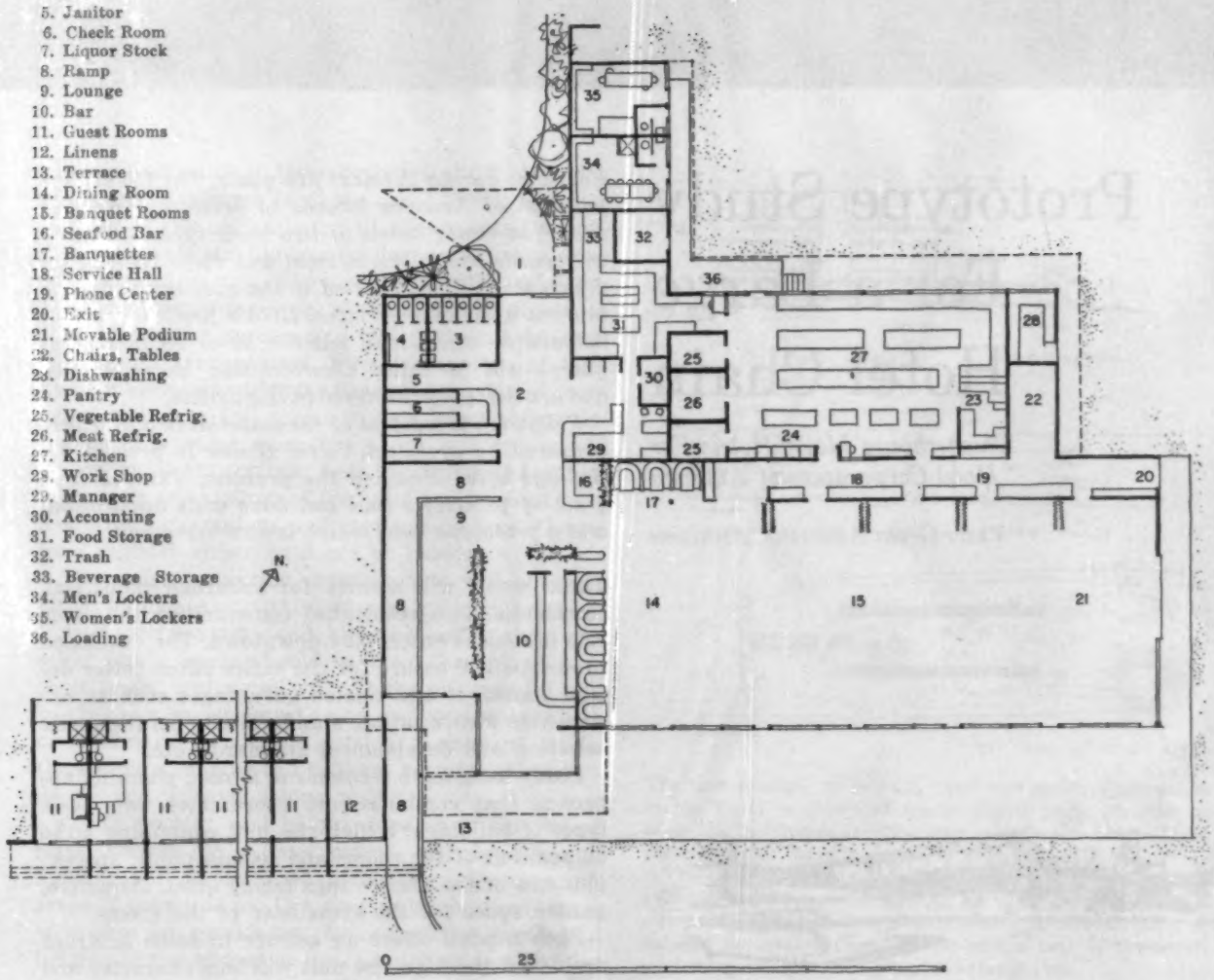
The dispersion of the one-story guest room units provides a goodly measure of fire protection, while the core building is of fire-resistant construction.

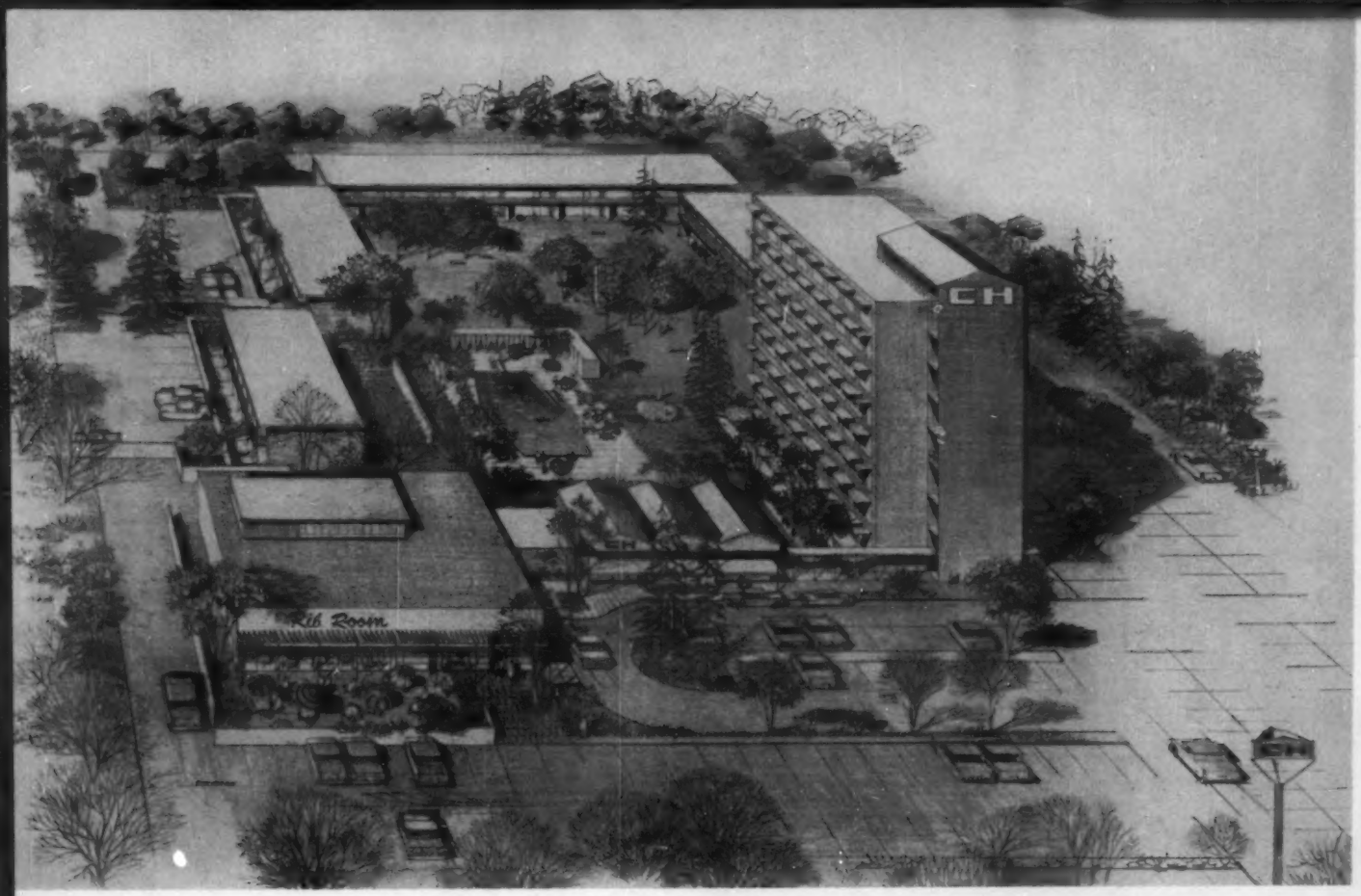




CORE BUILDING & SOCIAL CENTER

1. Main Entrance
2. Lobby
3. Women
4. Men
5. Janitor
6. Check Room
7. Liquor Stock
8. Ramp
9. Lounge
10. Bar
11. Guest Rooms
12. Linens
13. Terrace
14. Dining Room
15. Banquet Rooms
16. Seafood Bar
17. Banquettes
18. Service Hall
19. Phone Center
20. Exit
21. Movable Podium
22. Chairs, Tables
23. Dishwashing
24. Pantry
25. Vegetable Refrig.
26. Meat Refrig.
27. Kitchen
28. Work Shop
29. Manager
30. Accounting
31. Food Storage
32. Trash
33. Beverage Storage
34. Men's Lockers
35. Women's Lockers
36. Loading





Prototype Study For a Large Hotel Chain

Charterhouse Motor Hotels For Hotel Corporation of America

Victor Gruen Associates, Architects

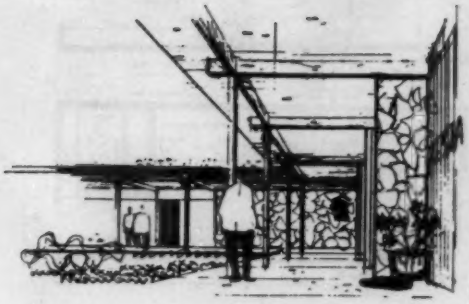
Ed. note: during the next five years, The Hotel Corporation of America intends to develop a chain of suburban motor hotels of two basic types, differing as regards capital investment and room rents. This difference will be reflected in the quality of the restaurant and other services. HCA's first-class establishments—which may number 50 or 60 in several years—will be called Charterhouse Motor Hotels, and are the type considered in this article.

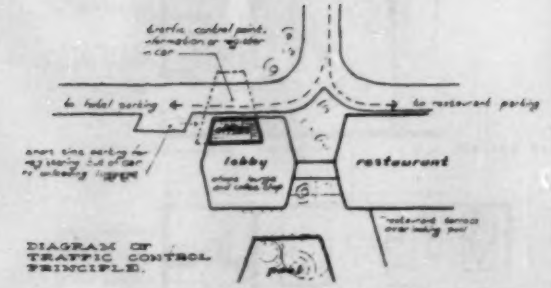
Following is a digest of the material in a brochure prepared by architect Victor Gruen to present his findings after studying the problem. The result is a set of principles that can have wide application, and a prototype hotel which is now being built.

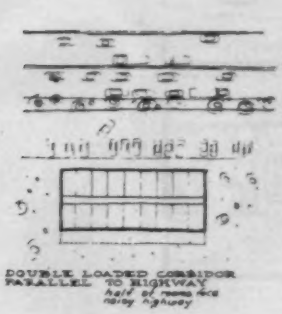
These hotels will assume for suburban industrial, commercial and residential communities the same role first-class hotels play downtown. The developed prototype will assure for the entire effort better design standards and related advantages such as nation-wide identification, standardized operation, site selection and development standards, etc.

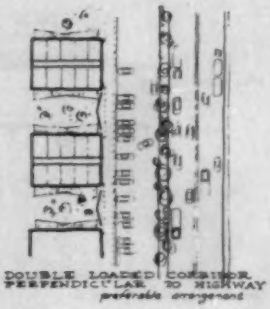
Study leads us to recommend a basic planning approach that combines and coordinates two basic types of buildings: a high-rise unit containing 40 to 60 per cent of the rooms and certain public spaces; plus one- or two-story wings facing quiet, attractive, garden space for the remainder of the rooms.

Such a parti offers an answer to some inherent problems: the high-rise unit will lend character and









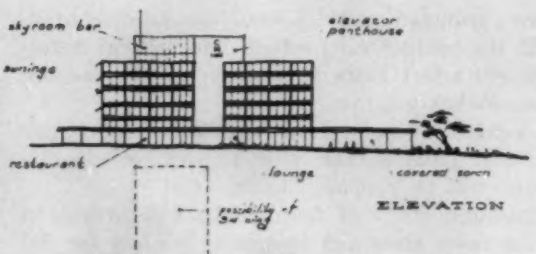
promotional value to the enterprise, and distinguish these establishments from the usual motel; will permit better site utilization; will offer rooms for non-driving guests staying several days; will lower service costs in this unit. The low wings will furnish accommodations for those wishing direct access to their cars and a garden, and who prefer the privacy of such an arrangement. The combination of high and low elements will make possible a variety of room types and sizes and prices to meet the varying demands of a wider market.

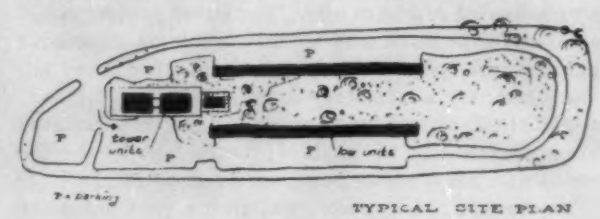
SITE PLAN PRINCIPLES: both incoming and outgoing guests and visitors of the hotel proper must pass a control, information, and registration area. Guests may register either outdoors or indoors.

For noise protection, guest rooms will not face either highways or parking spaces, but quiet areas.

THE RESTAURANT: and also the coffee shop and other public areas should be near the entrance so their traffic and noise will not disturb guests; and so they can be developed as an architectural feature or landmark to attract outside restaurant trade. Guests must be able to use them without going outdoors, and without a long walk.

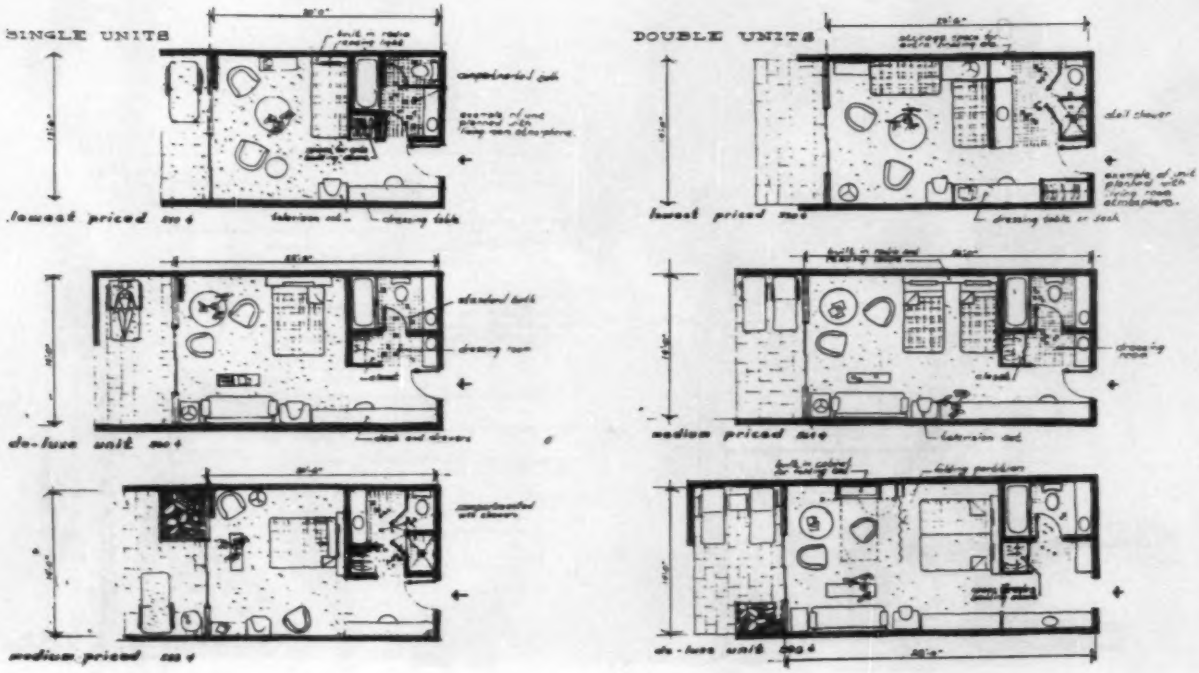
GUEST ROOMS: will be provided in a variety of sizes, shapes, types, and prices. Furnishings and lighting will be designed to increase the apparent sense of spaciousness. In sizing rooms, economy must of course be considered, but squeezing areas and heights to the utmost to lower building cost is false





The first example to be built (and now under construction in the East) is shown at top of facing page; its plan on page 215, following. It will carry into reality most of the principles and ideas discussed in this article.

The sketches on these two pages are reproduced from the architect's brochure summarizing his study. Above, top, site-planning principles; immediately above, a consideration of some of the combinations possible with a two- or three-unit multistory complex, and its plot arrangement



economy; cramped quarters would be out of character with the quality being sought. Mechanical installations will affect costs to a much greater degree than somewhat generous rooms.

The control of noise from outside, from nearby rooms, and from corridors is imperative. Special measures will be proposed to this end.

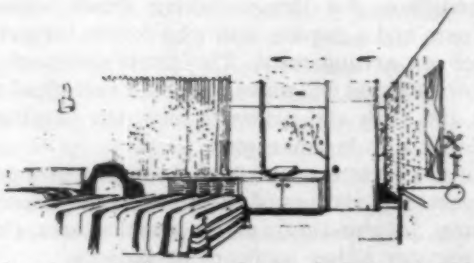
A thorough study of furnishings will provide a basis for room sizes and shapes as well as for details, materials, and colors that will combine good looks with durability and ease of maintenance.

GROUPING OF ROOMS: the double-loaded corridor is cheaper to build, easier to serve; but creates a noise problem and prevents direct access to a car. The single-loaded corridor solves the latter problems but costs more to build and is inadvisable on expensive property. A split-level scheme would offer many advantages over a two-story unit with stairs.

PARKING: should be of several kinds, in separated areas, according to kinds of traffic. *Refer to the prototype plan, right page, as an example.*

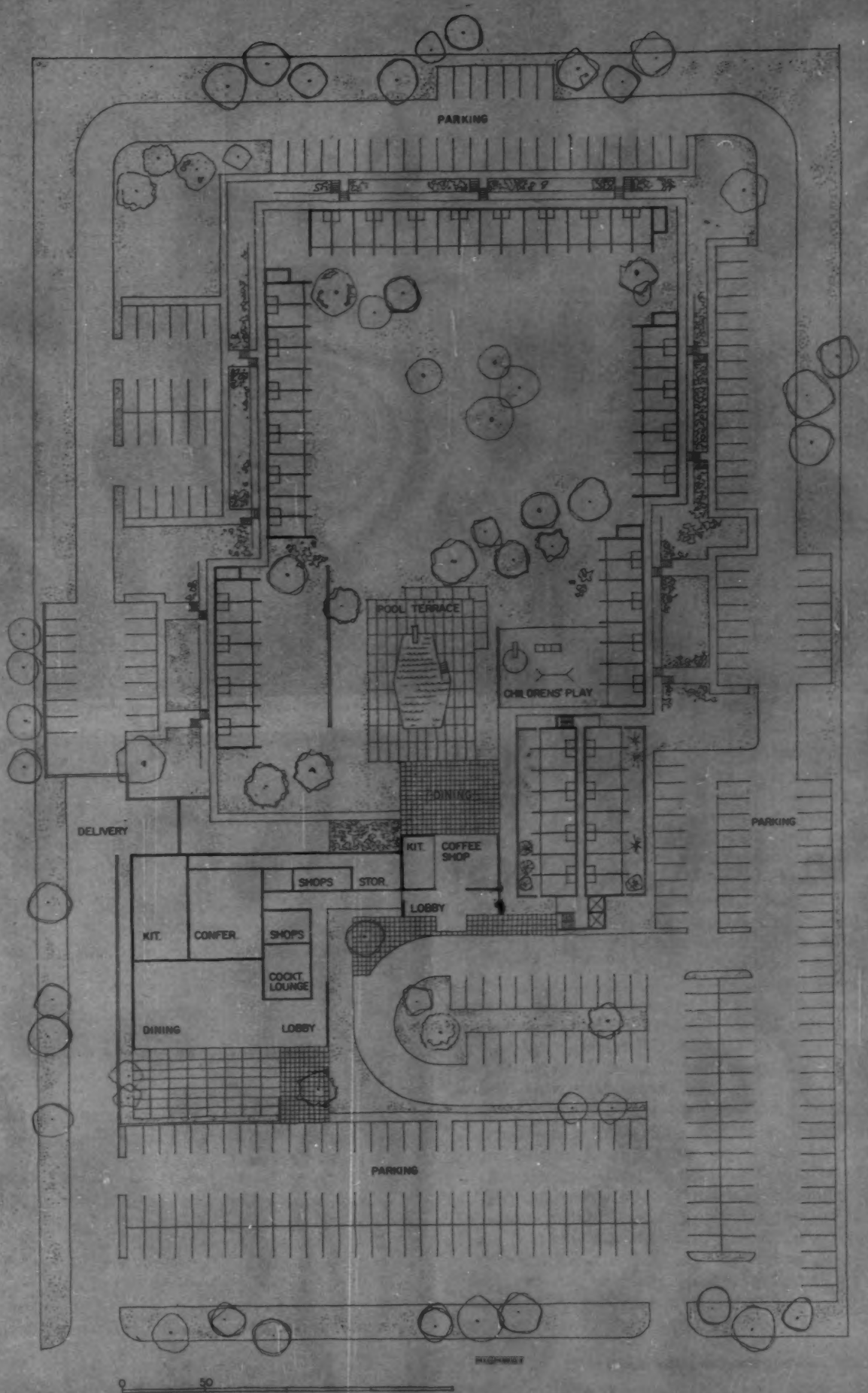
LANDSCAPING: terraces, swimming pool, gardens, playgrounds, etc., are important amenities deserving careful study as an integral part of the scheme, and decisive in establishing a desired character.

SIGNS AND GRAPHICS: will be especially studied to the end that lettering and symbols and color will be coordinated for buildings, identification towers, directional signs, menus, towels, stationery, dishes, matches, etc., on a national basis.



Top of page, a consideration of room elements as reproduced from the architect's study. Sizes and shapes result from the *kind* of room desired, such as a bedroom with a living room look, and so on. There will be a variety of sizes and rentals in both singles and doubles. Room prototypes will be based on the habits of the occupants, which are different in a suburban motor hotel than in a downtown hotel. Architect Gruen maintains that unduly cramping room sizes and heights is false economy in high-class accommodations such as these.

The plan at right is for the first actual project to be built, now under construction in the east


PARKING
POOL TERRACE
CHILDRENS' PLAY
DINING
DELIVERY
KIT.
COFFEE SHOP
SHOPS
STOR.
LOBBY
KIT.
CONFER.
SHOPS
COCKT. LOUNGE
DINING
LOBBY
PARKING
PARKING
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All photos by Roger Sturtevant

A Resort On The West Coast

Dinah's Motor Hotel
Palo Alto, California

Campbell & Wong, Architects
Eckbo, Royston & Williams, Landscape Architects
William B. Gilbert, Structural Engineer
Ben B. Lezin, Electrical Engineer
Daniel Yanow, Mechanical Engineer
Fidelity Building Co., General Contractors

This motor hotel's architecture possesses unusual refinement, and a further quality hard to achieve: an air of gaiety that is not too blatant or insistent, as resort "atmosphere" often is.

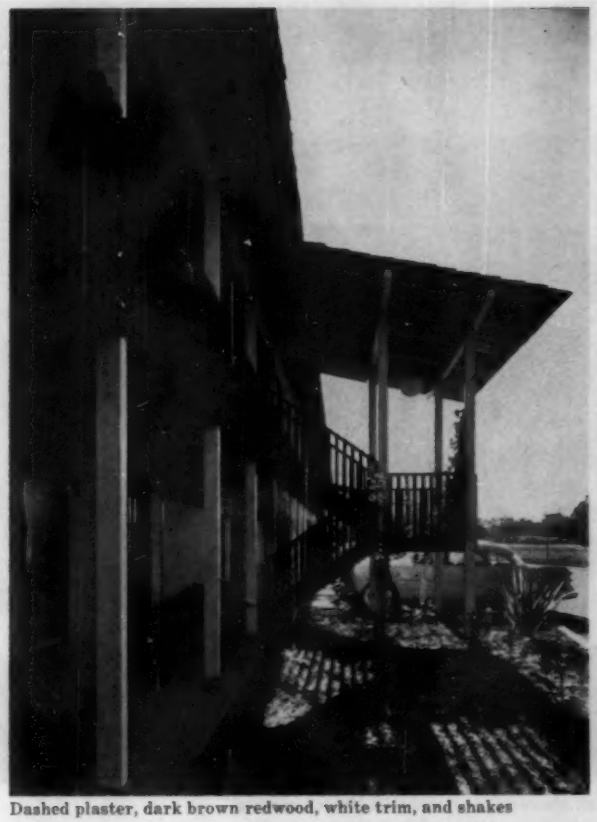
In order to lend interest to the level site the buildings are informally disposed, some of them open to the pool, some to the lagoon.

Of motor hotel design, John Carden Campbell, of Campbell & Wong, has this to say: The first step in creating a better motel, we believe, is to consider analytically the procedure the motorist follows as he arrives, lives in, and departs from the motel, observing closely those elements or arrangements that help make his visit a pleasant, convenient, and appealing one. Following such study, we have been able to draw several general conclusions about motel design.

In many cases, motorists prefer to remain in the car to register, and for them a drive-up window is an appealing feature.

The average guest hopes he will not be involved in a lot of tipping in a motel, yet part of his luggage —and sometimes enough for the whole family—must get from the car to the room, so parking should be as convenient to his quarters as possible.

The room or suite must be attractive, of course, but if the motorist is to remember the place as one to come back to or recommend to friends, it must



Dashed plaster, dark brown redwood, white trim, and shakes

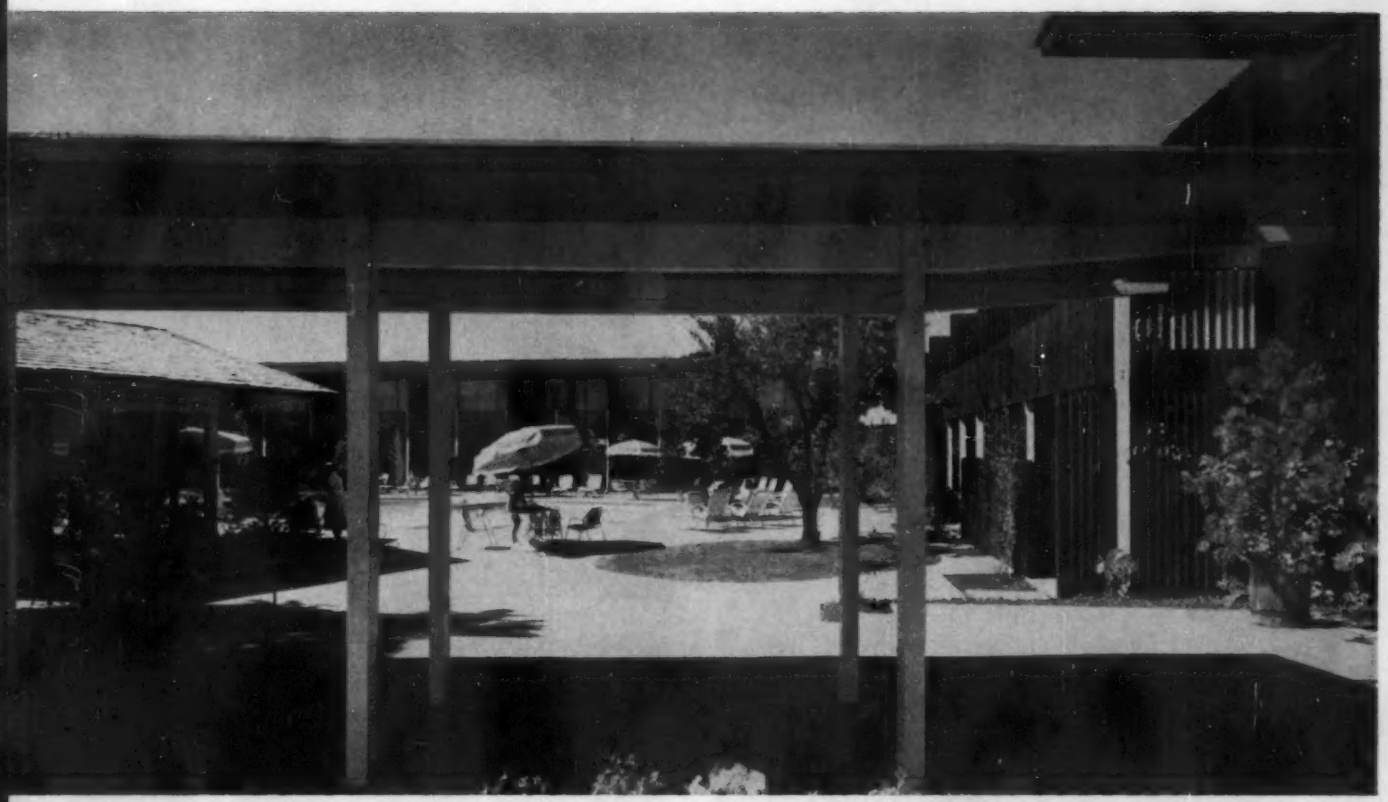
The total visual effect must be carefully considered

Rough-sawn wood beams, neutral wall colors, and teak furniture

have extra qualifications that make it pleasing: possibly a balcony, or a small walled garden, or a view —something that lifts it out of the "just a room" category. Occasionally, in larger suites, fireplaces and living room furniture can be used to get away from the "bedroom look"; in fact, even in single rooms, furniture sometimes can advantageously be selected and arranged to make the room look more like a small study. Extra services, such as locating ice machines within 50 to 75 feet of every unit, add a convenience that is remembered. And so does room service, providing a restaurant is part of the scheme.

In motel design, some factors are like those in a hotel; some are unlike. As for the necessity for soundproofing and providing flexibility of room interconnections, the problem is similar; various family arrangements—familiar in hotels—must also be considered in motels. However, because of a more intimate relationship with the ground and private outdoor space, motel units can often be made much more homelike and inviting than hotel rooms.

A major consideration not usually associated with city hotels is landscaping and land planning, which should certainly involve more than the installation of a pool and a few shrubs. Actually, the planning of the approach, parking, connecting walkways, pool area, and outdoor dining space becomes a basic design problem of some complexity, and the success or failure of the entire scheme may hinge on it.



Two-story units with decks and private patios form a court about the pool, planting, and umbrella-shaded seating

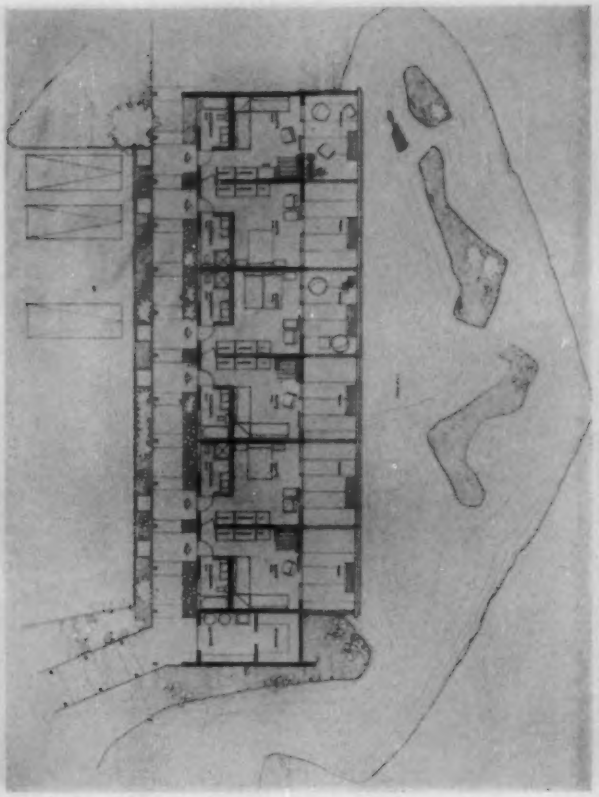
A fireplace or walled garden adds appeal

Food preparation and service is another factor of increasing importance, whether it involves a full-scale restaurant or the provision of a room-service "continental" breakfast. Although some motels still provide kitchen facilities for guest units, their popularity seems to be decreasing.

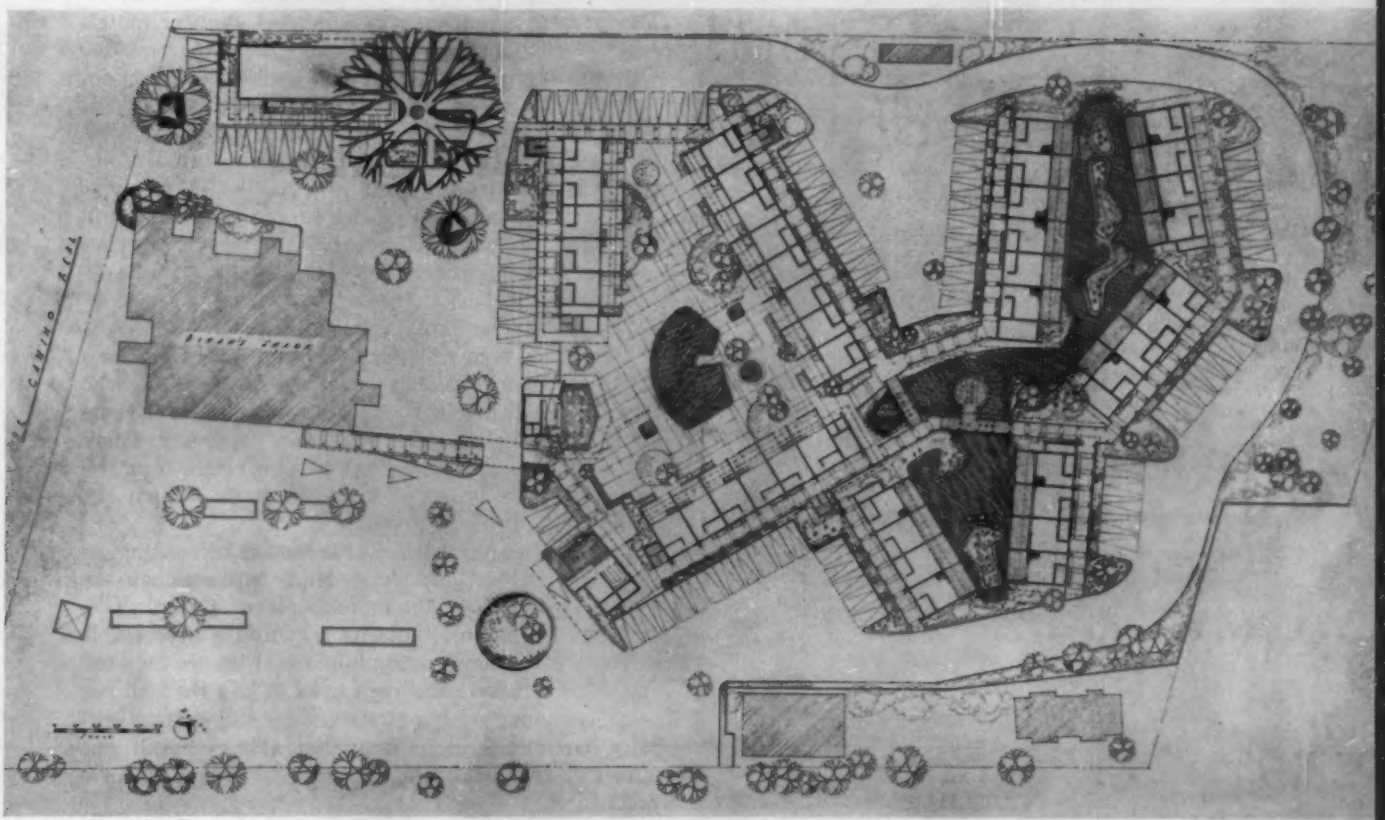
Color is an element that can contribute a great deal—when well handled—in creating an attractive quality in the eyes of the guest. When badly handled, it can create the opposite reaction. This is particularly true in those cases in which motels appear to be regarded as a huge signboard done up in the gaudiest of colors as a lure to draw in business. Garishness may catch the eye, but it does not follow that the motorist will want to stop, or enjoy his stay, in such surroundings. The same thinking applies to signs: a properly scaled, well-designed sign will do more in selling the motel than will the overpowering examples we see on every hand. There seems to be a new emphasis on good appearance as a means of doing a more proficient job of roadside selling.

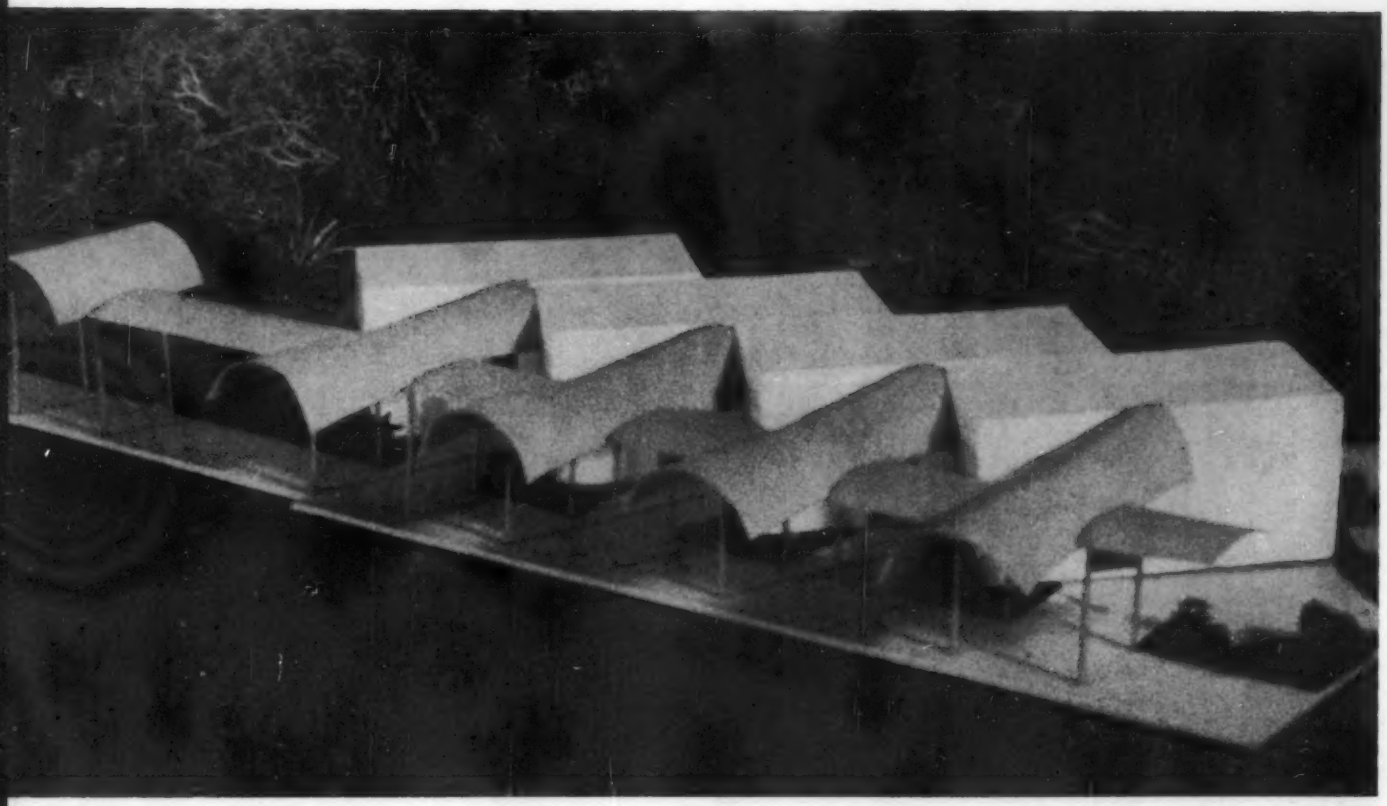
Many owners seem to consider durability of prime importance when it comes to interiors, but the total visual effect must be considered if a pleasing atmosphere is to be achieved. Carpets, bedspreads, and curtains should have related patterns; furniture and accessories must be coordinated in scale, material, and color; wall decorations should be carefully chosen—possibly to reflect local color of interest.

A poolside restaurant pavilion serves refreshments to guests



Detail plan of lagoon suites

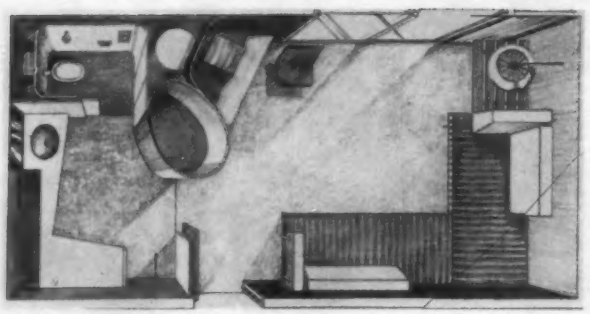




Beyond Prefabrication

The Manufactured Sleeping Unit Offers Startling Implications

By Rufus Nims, Architect



The present situation can be stated simply: motels cost too much and are too difficult to finance.

Motels have now become "respectable"; chain operators and other professionals have entered the field. The result is a general upgrading of facilities to meet competition. This adds up to greatly increased total project costs.

As prices soar, so does the spread between available financing and final construction cost. Likewise, the necessity for higher rates becomes inevitable, as does the need for a higher occupancy percentage. These two factors explain the spread.

Increased room rates are gradually freezing out a large segment of travelers who prefer motels but who face the choice of third-rate accommodations or rents greater than their ability or inclination to pay. There is a great need along the highway for clean, comfortable, inviting lodgings—devoid of frills—which can be had at moderate prices.

The number of highway travelers is increasing, as is the number of highways. Many businessmen are looking longingly at the motel business. Given a predictable, reasonable building cost and a predictable delivery date, they would plunge in. Finance men tell us that if a motel can break even at less than 50 per cent occupancy with a $6 rate, they will enthusiastically participate in its financing. Our research was aimed at this goal, and our results appear to have reached it.

Various other efforts to cut costs have been tried. Less space and cheap construction place the operator in a non-competitive position and are no answer. Certain chains have tried having a builder follow jobs from place to place with only moderate success, since costs vary widely, particularly in mechanical and electrical work. Prefabrication has been unsuccessful, since only the shell of the building is manufactured, and its proportion of the total cost is so small that if thrown in free, the total price would be but little less than that of conventional construction.

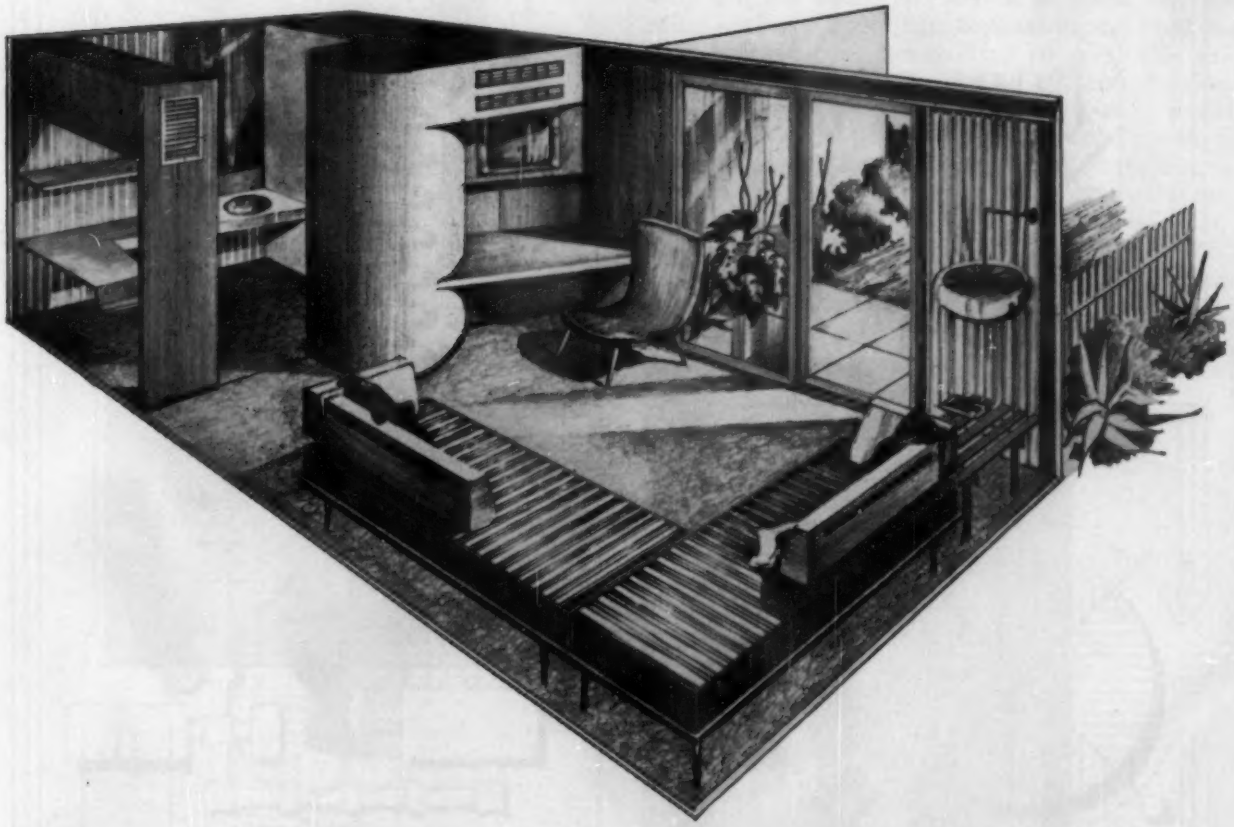
Having experienced all the foregoing, we approached the problem from the standpoint of controlled costs. We have gone to the manufacturers and proposed, designed, and submitted for bids a complete sleeping-room unit, as shown. It will be wholly manufactured in the plant, with all finishes, fittings, fixtures, and furnishings in place. The complete unit will be hauled to the site and connected—*not erected.* This process consists of bolting the unit to four piling foundations and then connecting electricity, gas, water, and sewer. The assembly of the manufactured canopy parts more nearly approaches prefabrication, but they are made in large pieces and are very simply joined. The factory promises completely predictable prices within the stated budget. The restaurant and service station accompanying most motel projects has been similarly approached and solved.

The manufacturer can buy materials, equipment, and labor at wholesale and can sell at wholesale. Shipping is the only variable, but one that can readily be determined for a given site.

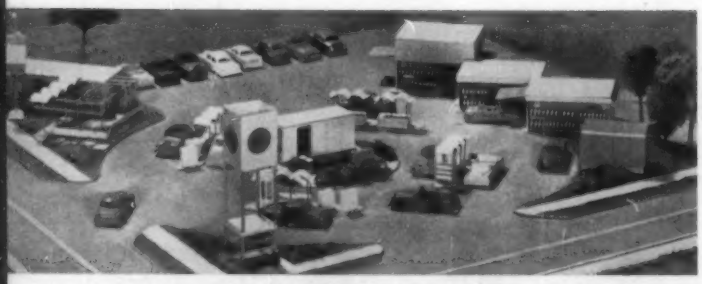
During the period between the placing of an order and delivery of units by the manufacturer, the contractor has roughly enough time to grade the site, install utility lines, drive foundation piles, and place the paving (including the sidewalks). The units are then connected, and the owner is in business within a period of roughly one month. There has been no construction financing, and a saving of five months' earnings from the project. Because of these latter plus factors, we have been able not only to meet the budget, but to reduce it slightly.

There are many design advantages in such a system. Parts and pieces can be shaped and molded to suit minimum space requirements; control of traffic flow is easier with molded shapes than with rectilinear ones. Since each piece of equipment is predetermined, it can be readily integrated into the whole. These self-contained units will have individual air conditioning, heating, hot water, electrical panel, and television; and each of these will be integrated into the finished whole as various elements are integrated into an automobile.

The greatest design advantage lies in freedom of arrangement. Since the units are whole, there is no



Motor Hotels: *Rufus Nims*



gain in a common wall; and units can be staggered horizontally or vertically, stacked, cross-stacked, or conjoined in any possible pattern. We are free of weather—because of the piling footings—and can build in the coldest winter months.

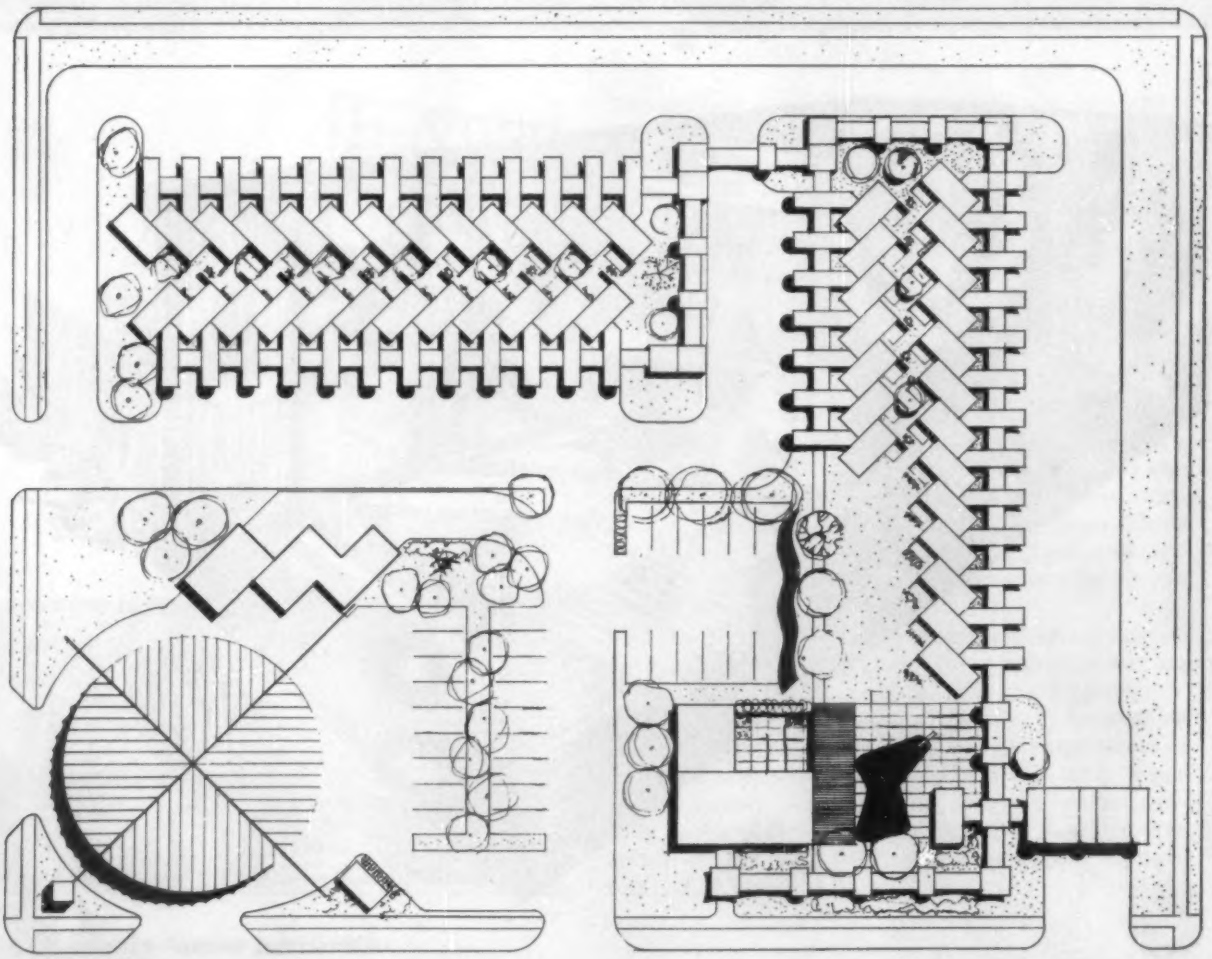
Because of this flexibility, interior advantages occur. The entrance can be placed on the *side* of the building rather than the front. Thus, the bath and dressing rooms can be organized independently, keeping spillage and messy traffic free of the living area. The side entrance permits a side terrace, which in turn means the terrace can be more readily and acceptably screened from neighbors than the usual end terrace. This permits greater land density and savings in land cost.

Although we have come up with a nice unit which stacks, colludes, and adjoins in every combination, each room is still (with apologies to Mr. Wright) only a nice box. We are obligated to conceal this fact from the public and probably from ourselves as well. Thus, we have expended considerable energy on the walkways and caused the canopies to dominate the assembly. We think it helps.

The designer is obliged, of course, to call for as few parts as possible. The mechanical core is constant; while left and right counterelements are the only variables. The basic room is ten by twenty, but can be expanded to twelve by up to forty (using the same core) at little added cost.

The canopy is of five sections, each slightly different but nesting together and providing complete flexibility. It can crawl up or down hill, turn corners, and assemble itself to cover large areas for entrance, pool, etc. Since all furniture except beds and chairs is built-in, the manufacturer's inventory can be kept relatively small.

Even at this preliminary stage, using agencies have requested over two thousand units, and four prime manufacturers are bidding competitively for the work. There will be some six to ten sub-manufacturers whose work will be integrated.



Frank Lotz Miller

A Downtown Motor Hotel Of Distinction

Pan-American Motor Hotel
New Orleans, La.

Curtis & Davis, Architects

Of this stylish in-city motor hotel, architects Curtis & Davis have this to say: "The site was chosen because it was closer to downtown than any of the other motel locations in the long string lining the main highway into New Orleans from the west.

"The small site set the design, developed for minimum coverage and maximum parking. The multi-story arrangement revolves about the idea of rooms above ground level, with only elements at first-floor level that are clearly required to be there, such as office, entrance lobby, bar, restaurant, and kitchen. Such a scheme permits parking 60 cars. This arrangement in turn sets the number of rooms possible.

"The rooms are disposed—ten to a floor in a six-story block—on one side of an open screened corridor. Each floor is typical except the second, which houses a manager's suite. Each pair of rooms can be thrown together to form a suite.

"The air conditioned building is of reinforced concrete construction with flat-slab floors to permit a minimum floor-to-floor height."

General view from the highway

To Serve Suburban Business

Cranbrook House, Detroit, Michigan

Louis G. Redstone, Architect
Allan G. Agree, Associate Architect
Avner Naggar, Project Architect
A. E. Lawrence, Engineer
Edward A. Eichstedt, Landscape Architect
Samuel Cashwan, Fountain Sculpture
Tilchin Aaron, General Contractor

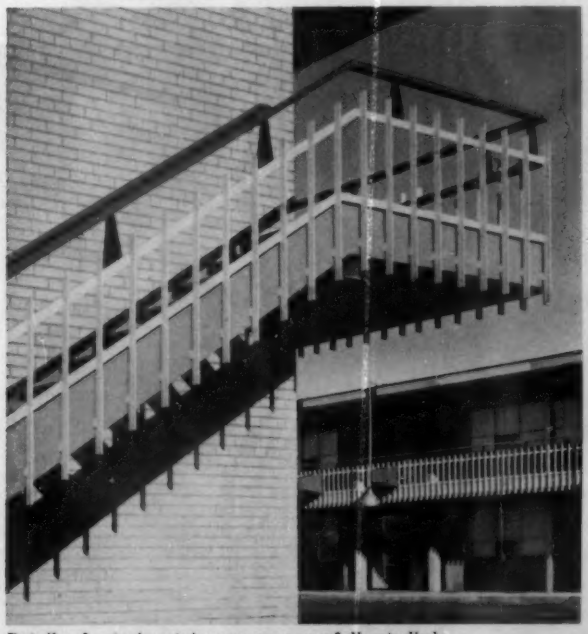
This 76-unit, two-story motor hotel is located in northwest Detroit within a triangle formed by three major highways. Northland Shopping Center is nearby, as are numerous existing office buildings and the new Reynolds Metals Building, now under construction. The hotel is thus popular with executives, salesmen, and engineers visiting the area.

The fire-resistant buildings are arranged to protect occupants from traffic noise. Guests—who are offered a free breakfast—are provided with television and 24-hour telephone service. Typical rooms feature walnut paneling with decorative metal sculpture. There is a meeting room for 25-30 in the basement of the main office building.

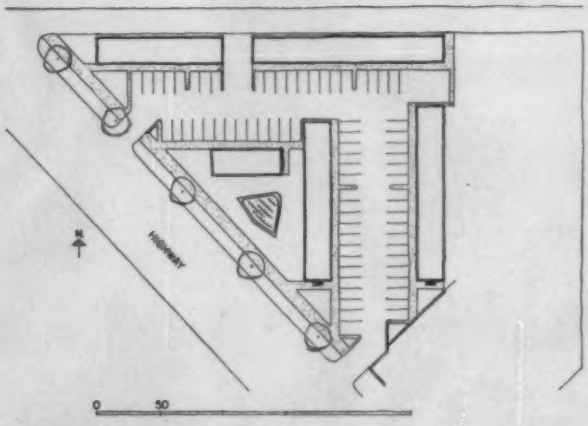
Careful study was given to exterior lighting, signs, and stairways. The structural frame is of steel and concrete; exterior walls are face brick; interior walls are painted plaster; typical sash are aluminum; all guest rooms are carpeted.

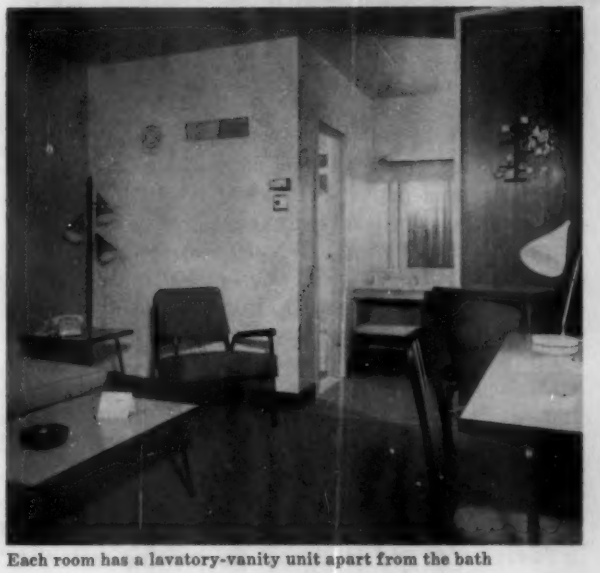
Photos by David R. Kits

The colorful reception lounge overlooks the fountain



Details of exterior stairways were carefully studied



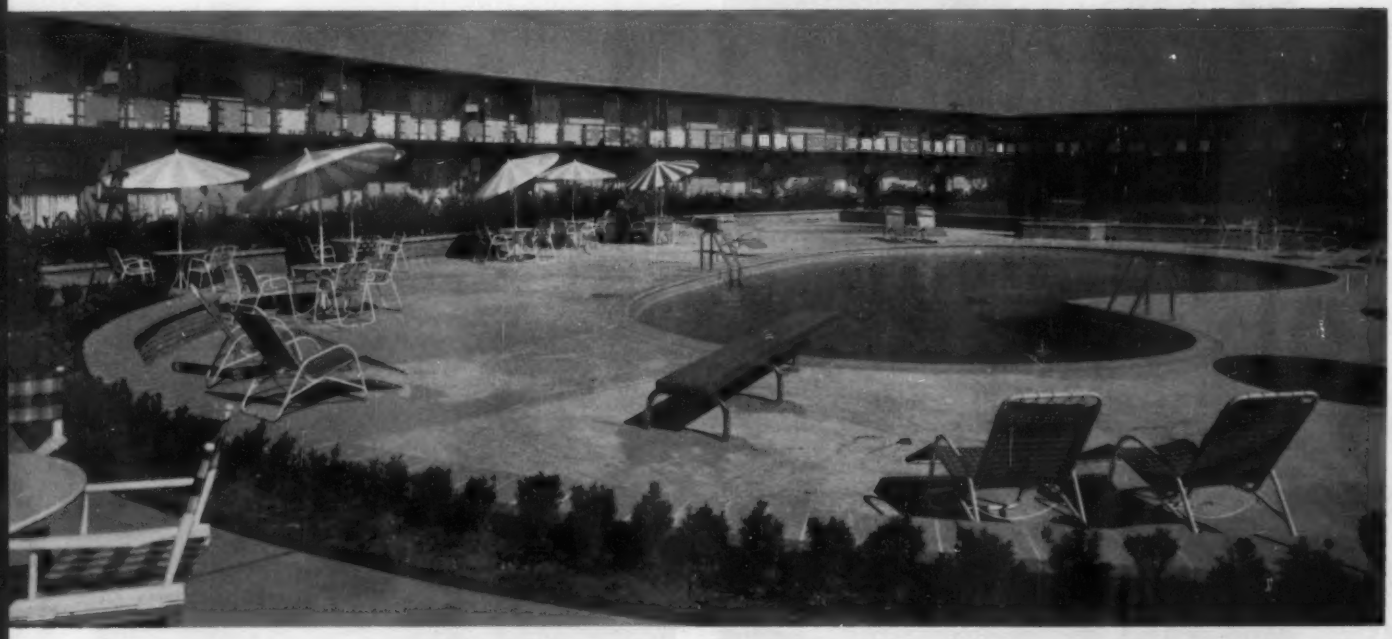


Each room has a lavatory-vanity unit apart from the bath

One can park and unload his car directly outside his room

All photos but one: Ulric Meisel

Detail of main entrance



Louisiana Luxury Resort

La Sands Western Hills Hotel
Shreveport, Louisiana

Lester G. Haas, Architect
John S. Malahy, Jr., Mechanical Engineer
E. M. Freeman, Structural Engineer
Stuart M. Mertz, Landscape Architect
Tower Contracting Co., Builders

The guests in this 133-room motor hotel—located 4 miles east of Shreveport on U. S. 80—are pampered by such amenities as air conditioning, TV, radio, room service, free ice cubes, valet service, free morning coffee and paper, baby sitting service, and kennels for the dog! A restaurant, coffee shop, bar-lounge, and gift shop are housed in the group.

Architect Haas says: "The hotel was designed to create a feeling of warmth, informality, and gaiety. All the buildings face inward to the central landscaped garden and sunken swimming pool terrace. Entrance and service for all rooms—as well as parking—is on the outside perimeter. Ground-floor units have private terraces on the garden side; second-floor units have balconies overlooking the garden and pool. All materials were chosen to further the air of informality; color is used extensively to add a festive note and to attract the passing motorist."

The bar-lounge opens to the pool terrace

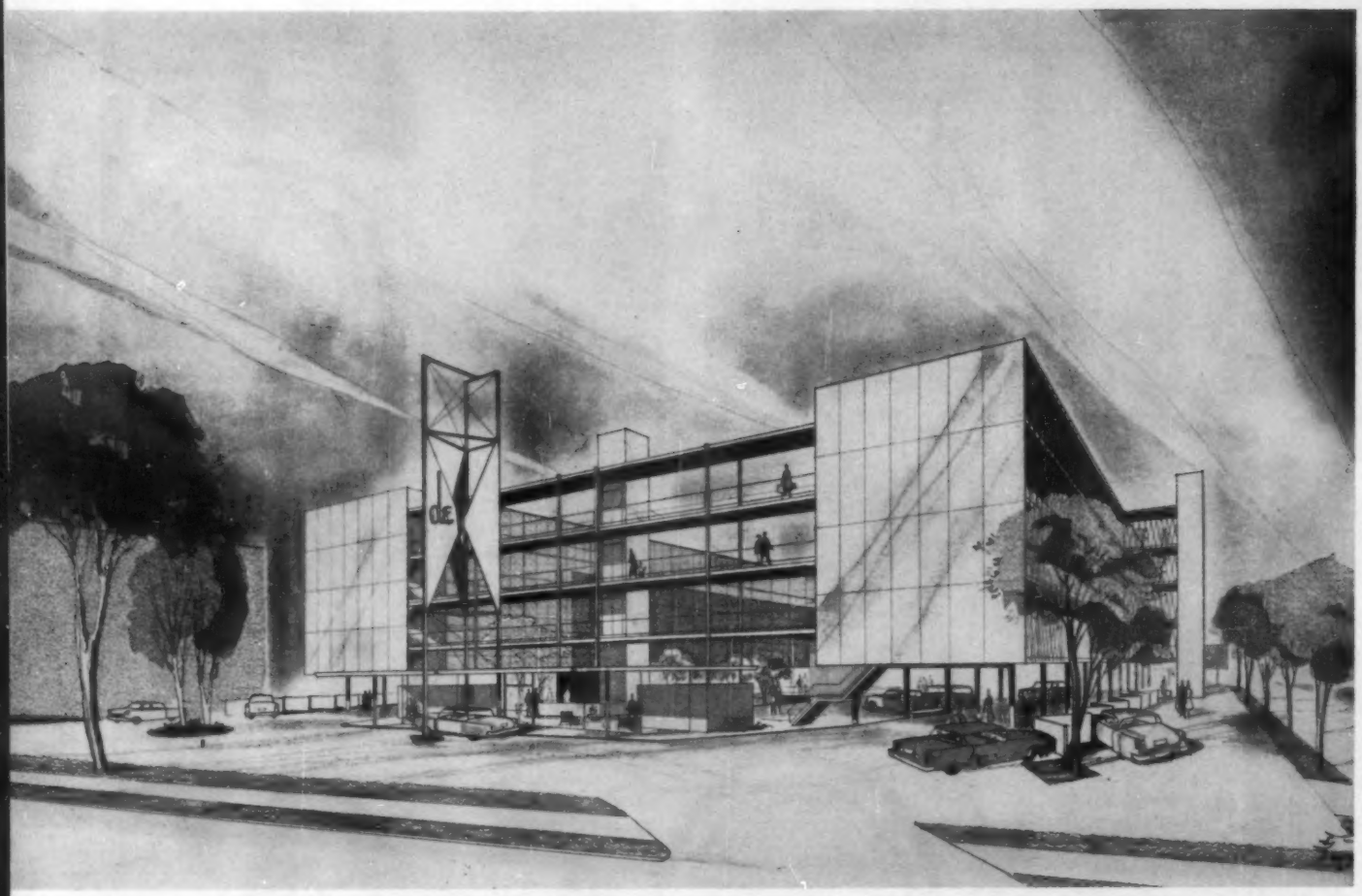
A typical second-floor studio room

Grabill Studio

Aerial view shows the six-sided plan focusing on the pool

Restaurant service is also provided out on the terrace

Interconnecting rooms can be thrown together into suites



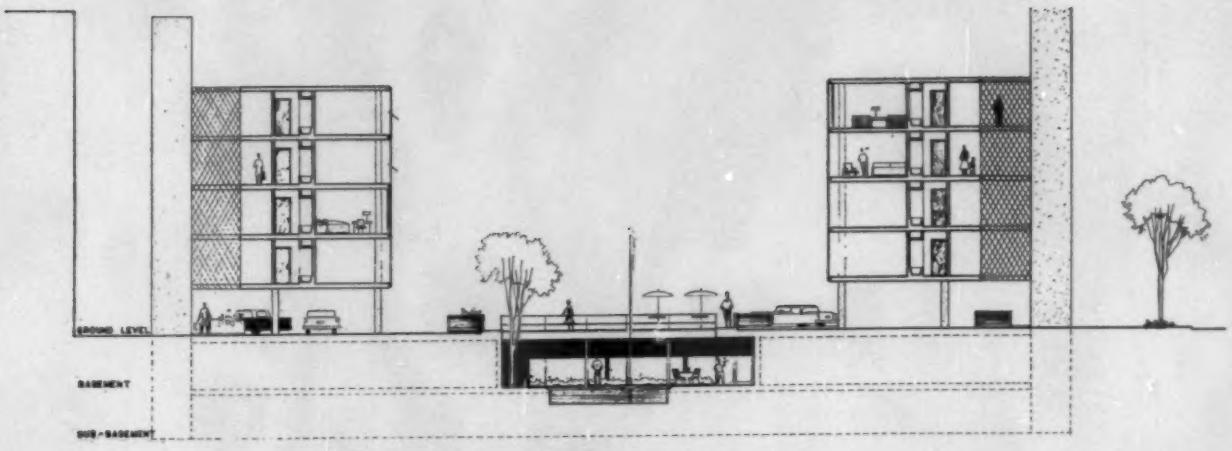
Scheme For A Mid-City Motor Hotel

Proposed Hotel de Ville
Kansas City, Missouri

Colbert & Lowrey & Associates, Architects
Designed for Shelby Construction Co., Inc.

A product of the 1950's, the motor hotel in the heart of the city must compete with the downtown hotel on its home grounds. This proposed 250-room, air conditioned complex—located one block from the civic auditorium and main shopping center in Kansas City—is expected to be under construction soon.

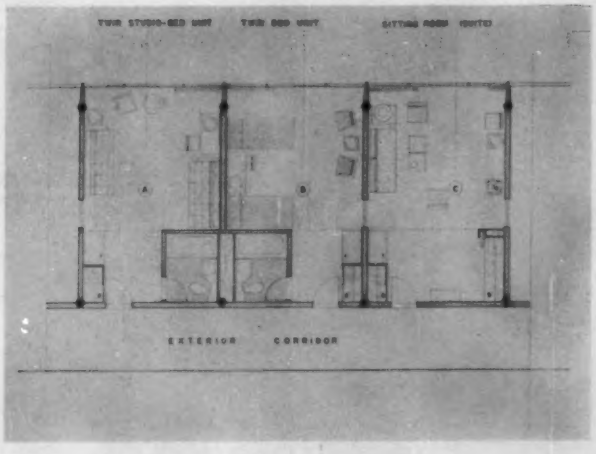
The design resulted from taking apart the elements of the city hotel, subtracting some, adding several, altering others, and then reassembling them into a completely new arrangement. The concept is based on providing a maximum of personal convenience, comfort and enjoyment to offset the weariness travel induces in a manner quite different from the impersonality of the typical traditional hotel, with its formal lobby, forbidding dining room, box-like bedrooms, and expensive auto storage. In this building, a more festive air should prevail, with the swimming pool-skating rink providing a focal point for the main lounge and restaurant areas, and half the rooms as well. From outside, the large glass areas and general openness of the design should furnish a new and enticing look to contrast effectively against



TRANSVERSE SECTION

TEXAS AVENUE ELEVATION

WILSON STREET ELEVATION

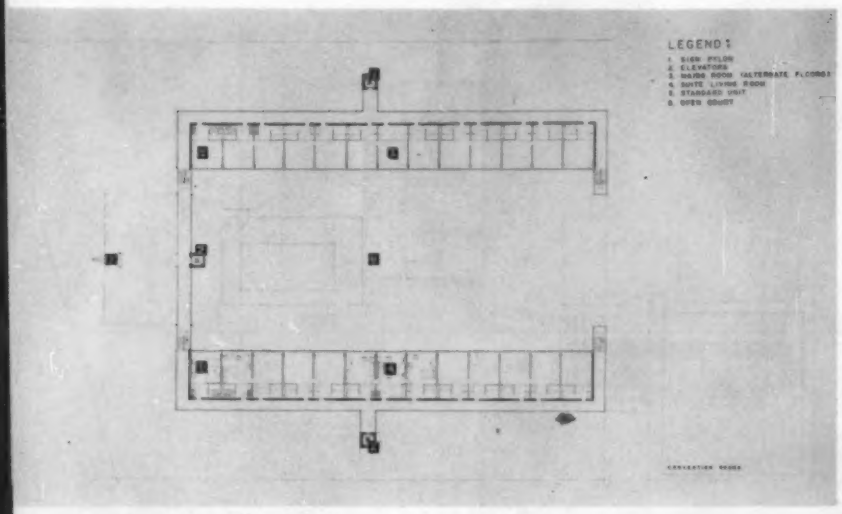


its brick neighbors. Convention and banquet facilities will provide support, but will be separated so as not to disturb usual functioning of the hotel.

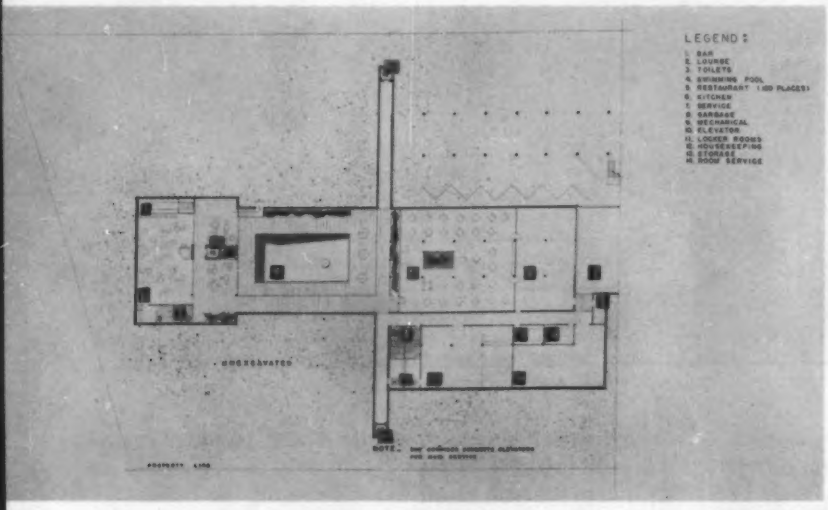
Study of the plans reveals that the lowest or street level is devoted entirely to parking about 100 cars. Here, one may register at a pass-through window and take an elevator directly to his room. The second, or Pool Plaza Level, parks an additional 30 cars and includes the pool, banquet room, kitchen, cocktail lounge, and promenade deck. Above, on the third or Lobby Level, are located the main desk, lobby, lounge, restaurant, florist shop, offices, and meeting room. The top seven floors are given over to guest rooms and suites.

Of the total 156,800 sq ft area, 63 per cent is devoted to rooms and suites while 12 per cent goes to the restaurant, banquet room, shops, and lounge. The pro-rated cost per rental unit (yet to be exactly determined) runs about $10,000. The structure will be a concrete frame with flat-slab floors and exterior facings of thin-slab marble, precast terrazzo, or insulated porcelain enamel panels.

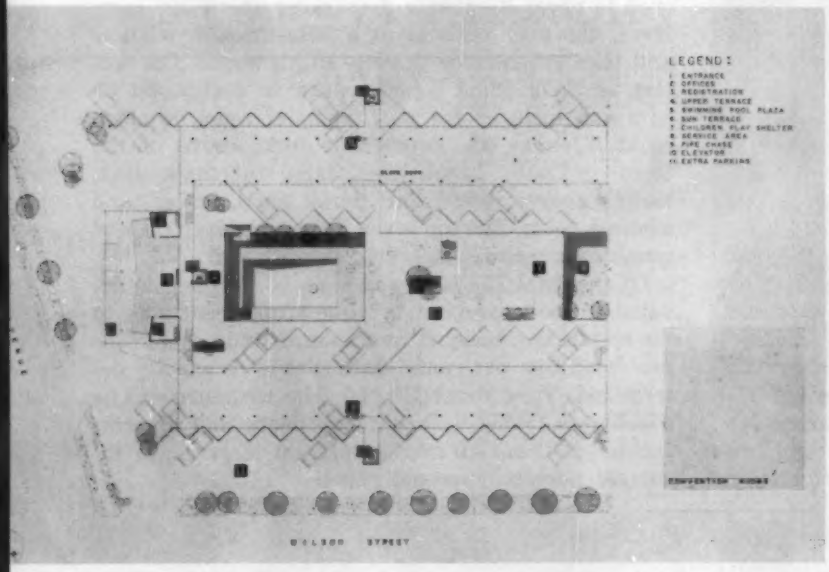
Motor Hotels: *Kansas City de Ville*



Typical Rental Floor Plan



Above: Excavated Level. Below: Ground Level



0 20

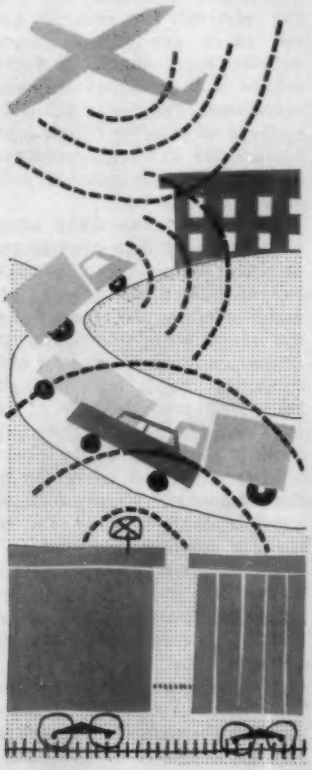
Noise Control Techniques for Motels

By William J. Cavanaugh and Norman Doelling,

Bolt, Beranek and Newman, Inc.

Consultants in Acoustics

Cambridge, Mass.



The increasing number of aircraft and cars and trucks creates serious noise problems for architects designing motels. In general, noise problems associated with a motel cannot be resolved by locating the motel in a quiet location. Economic success for a motel demands proximity to the noisy routes of traffic. Even in relatively quiet areas interior noise problems can pose equally stringent demands on the motel designer. Providing a comfortable environment of sound for motel guests requires an integrated study of both interior and exterior noise problems. The consideration of noise problems should begin at the time of site selection and should continue throughout the entire design.

Each motel will have special noise problems to be considered. However, the general approach is essentially the same for all motels. First, an acoustical criterion or design goal is established. Next, the noise source levels are determined. Finally the noise reduction requirements are found from the difference between the noise source levels and the criterion level. The source levels, the criterion must all be considered as a function of frequency. A single number description of noise problems is rarely adequate. For example, a so-called "40 decibel" partition may only provide 20 decibel noise reduction at low frequencies. Where jet engine noise is predominant, this degree of noise reduction control may be far from adequate.

Criteria

There is no unique background noise level criterion for all motels. An air traveller staying at an airport motel, for example, will generally tolerate more noise than a vacationer staying at a resort motel. The criterion noise levels for a particular motel will depend upon the type of client, the price for the motel rooms, the amount of competition for the motel in the area and on many other variables such as the "character" of the noise. In general, one chooses the criterion noise levels to be as high as permissible for two reasons. First, a high criterion will mean lower noise reduction requirements and hence less expensive construction techniques for exterior walls. Second, relatively high noise levels in each motel room will tend to mask noises from adjacent rooms so that the construction for noise reduction between rooms is minimized. Care must be taken, however, to assure that the criterion noise levels are not so high that a large fraction of the guests will object.

Exterior Noise

For most motels, the exterior noise levels are created by automotive traffic and/or aircraft. Railroad lines in the vicinity of the site can also be a problem. The noise levels from these sources can be quantitatively determined from the number of cars or aircraft, their speed and their location with respect to the motel. A visit to the site, however, may be required to determine the noise levels resulting from other sources, such as railroads, factories, etc. The usefulness of one's own ears for evaluating the magnitude of the noise problem should not be underestimated. Acoustical measurements are required only for extreme problems.

The difference between the outside noise source levels and the inside design goal levels (or the required reduction for the exterior noise) can be accomplished by three methods: site selection, site planning and appropriate construction techniques.

Site selection is particularly important for motels located near airports. The noise levels at locations around airports depend on the relative usage of runways and the location of maintenance areas. The air-

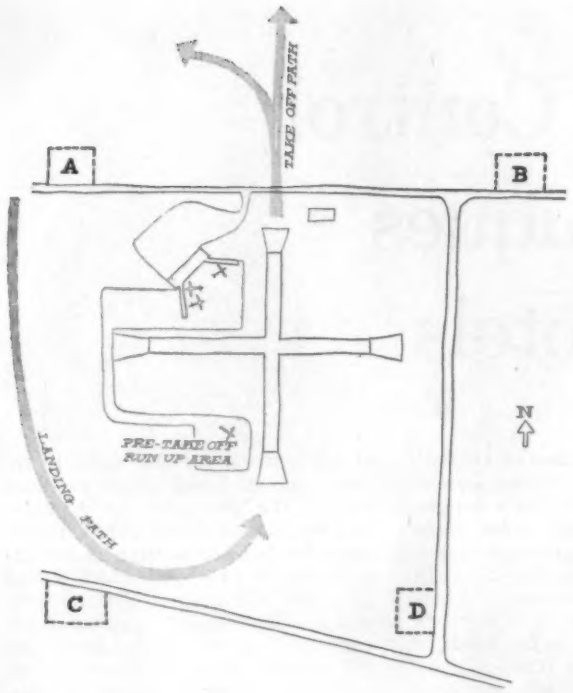


Fig. 1

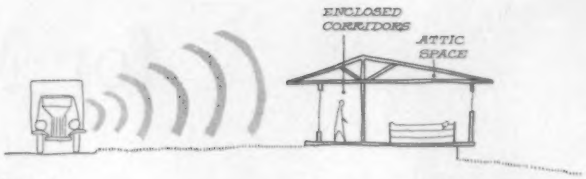


Fig. 2

Left: four possible motel locations are shown, with Site B best. Site A is near take-off path; Site C is near ground runup area
Above: enclosed corridors and attics serve as sound buffers

port management can usually provide data on the relative usage of the runways for various periods of the day and times of the year, and the location of ground run-up and maintenance operations. This information can be of great assistance for determining the relative noise levels at various potential sites. If, for example, the prevailing wind is from the north, most aircraft will take off toward the north and will land from the south. Because aircraft normally fly in a "lefthand pattern" around most airports, Site A, in Fig. 1, would be much noisier than Site B. Site C would be even worse than Site A as the pre-take-off ground runup operations would add to the exterior noise levels. Site D would be better than Site C, but not quite as good as Site B. Of course, when the wind direction changes, the noise levels at the various sites will also change. It will usually be found, however, that there are certain runways that are used much more frequently than others. It may be better to choose a site very near a runway which is seldom used than to choose a site located fairly far from all runways.

Similar considerations should be given to the selection of a motel site near a highway. Insofar as possible, a site near a stop street, a stop light or a steep hill should be avoided because the noise levels from accelerating or decelerating cars and trucks are generally much greater than the noise levels from cars and trucks moving at a constant speed.

Site planning can also aid in reducing noise levels just outside the guest rooms. Where possible, the motel buildings containing bedrooms should be located far from the road. Buildings containing dining rooms, function rooms, kitchens, supply rooms, offices, heating plants, etc. should be located between the highway and the other buildings to form an acoustically shielding barrier. If space is not available to move the buildings with bedrooms far from the noise source the plan of the building could be arranged to provide good shielding. As shown in Fig. 2, enclosed corridor or attic spaces can be used as noise reducing elements.

It should be pointed out here, that trees and shrubs are almost entirely transparent to noise. They are a visual barrier only, and are not an acoustical barrier. Free standing walls, too, are an over-rated noise control measure. To be effective, they must be quite high, at least the height of the building, and carefully located with respect to the noise source and the receiver.

If the noise levels due to exterior sources have been minimized by site selection and site and building planning, no special construction techniques may be needed. However, even for relatively low exterior noise levels, there are certain precautions which always should be followed to assure a satisfactory acoustical environment. The major acoustical limitations of exterior construction center around the requirements of observation to the outside and those of ventilation.

While there are many advantages to using room air conditioners, the architect should be aware that sound is transmitted through the ordinary under-window air conditioner into the room with practically no loss. Acoustically speaking, the air conditioner is simply an opening in the wall. One possible way of treating the fresh air inlet and the compressor cooling air inlet is to provide an acoustically lined labyrinth bend in the window sill. Figure 3 shows some possible configurations for treating the air conditioning system. (Note that the manufacturer may require larger fans in the units to overcome the large pressure drop around the bends.) In very noisy locations, near airports for example, a central ventilating system should be used. The noise reduction requirements through the exterior wall are so large that an adequate muffling device for

the unit air conditioners is too large and expensive to be practical.

The windows in a motel near an airport often require double glazing with an air space from 4 to 10 in. between the panes of glass. At least one window should be mounted in relatively soft gasketing material. Conventional double glazing techniques which use rigid metal-to-glass bonds and small air spaces between glass panes are only slightly better than single glazed windows with the same thickness of glass. Figure 3 also shows an exterior wall construction that may be required in a severe exterior noise situation.

Doors opening directly from the guest room to the outside should be avoided in very noisy environments. A central corridor system or a closed-in corridor is much preferred to single exterior doors. If an operable window is required, it should be carefully gasketed and provided with an adequate system for insuring an airtight closure.

"On-Site" Exterior Noise

Thus far we have concerned ourselves with noise sources exterior to the motel itself. There are, however, a number of problems which can also be classed as "exterior" but over which the designer has some control. These "on-site" exterior problems include the noise due to activity at the swimming pool, the arriving guests, outdoor terraces for the dining-dancing part of the motel operation, and others. The sound of these activities, however unobtrusive or even delightful to the makers, can be just annoying to the tired guest as would be excessive aircraft noise. The solutions to these problems are essentially the same as for the off-site exterior problem: that is, remote location of the noise source from the sleeping rooms, using enclosed corridors or lounges as buffers between the noise and the guest rooms, and finally, suitable wall and window constructions to reduce the noise. These kinds of noise problems might be quite severe in a "resort" type motel and, of course, should be controlled if the motel wants to enjoy a "quiet" reputation.

Interior Noise

The sources of interior noise are the occupants, and the equipment and gadgets that serve the occupants—the air conditioning system, radio, TV, plumbing, to name a few. Problems of these kinds are not new ones but have been solved with varying degrees of success by hotel and house designers in the past. Often more noise can be tolerated in motel rooms than would be deemed acceptable for more permanent apartments. The reputation for "acoustically transparent" walls can, however, travel far, and these certainly do not make for satisfied guests. Interior problems can be solved, for the most part, by the selection of proper materials and carefully detailed constructions, and, most important, a basic understanding of the nature of the particular noise problem.

Privacy

A guest expects a reasonable amount of acoustical privacy from the persons in the rooms around him, between his bathroom and the inevitable back-to-back one of his neighbor, and from the corridor. The measures necessary to completely eliminate these intrusions on one's privacy would be prohibitively costly. What is desired is that the normal speech and other living activity sounds from adjacent rooms are not distinguishable above the general background noise levels in the adjacent room. Background noise plays an extremely important role in the achievement of acoustical privacy. In fact, one can never estimate the noise reduction requirements of partitions without also considering the expected background noise. For example, at certain frequencies, speech levels may be in the order of 70 decibels. If the parti-

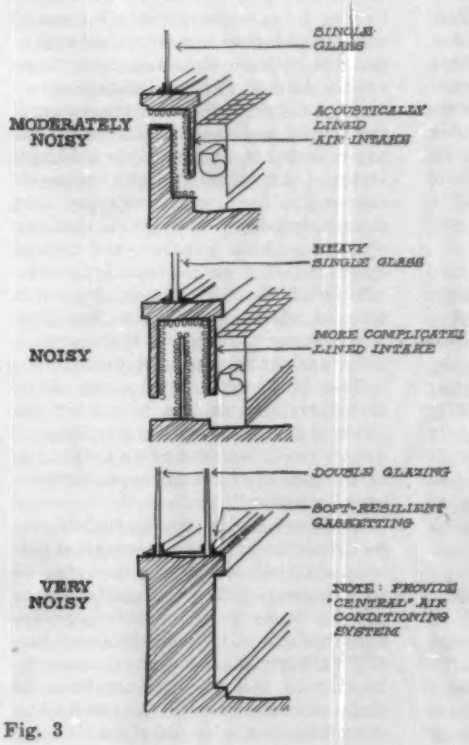


Fig. 3

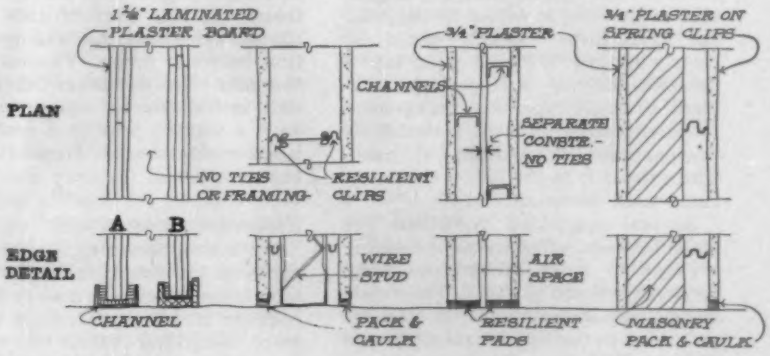


Fig. 4

Left: suggestions for glazing and air conditioning sound traps with varying degrees of outside noise conditions. *Above:* interior partition details designed to give 45-50 db noise reduction

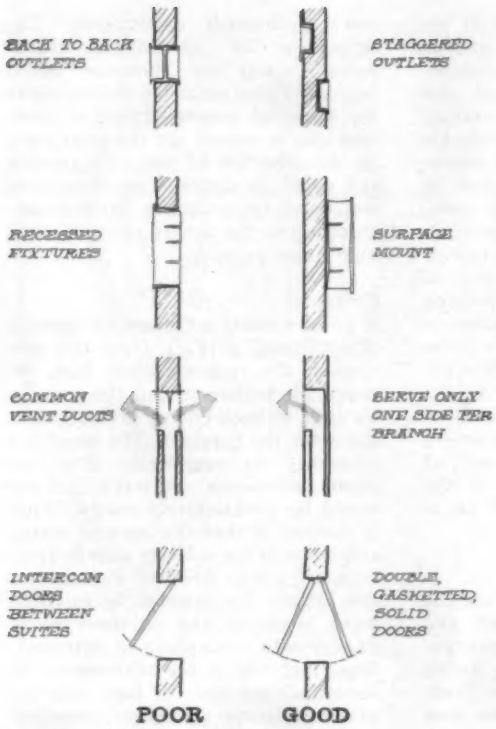


Fig. 5

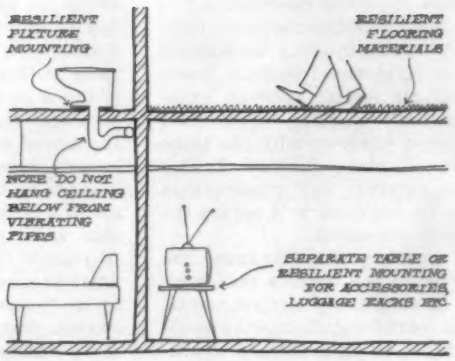

RESILIENT FIXTURE MOUNTING
RESILIENT FLOORING MATERIALS
NOTE: DO NOT HANG CEILING BELOW FROM VIBRATING PIPES
SEPARATE TABLE OR RESILIENT MOUNTING FOR ACCESSORIES, LUGGAGE RACKS ETC.

Fig. 6

Left: no matter how good the wall itself is in reducing noise transmission, it can be negated by sound leaks. *Above:* means for reducing structure borne sound from footfalls, equipment

tion to the adjacent room provides a 40-decibel reduction, at that frequency range, transmitted speech levels will be intelligible only if the background noise in the adjacent room is above 30 decibels. If the general noise level is below 30 decibels, the transmitted speech would be clearly audible. Without going into a detailed analysis, it is perhaps sufficient to state that the background noise condition and the selection of the partition type go hand in hand. The quieter it is, the better the partitions need be acoustically.

Several suggested partitions for walls between guest rooms, assuming average to quiet background noise levels, are shown in Fig. 4. These partitions should provide 45-50 db noise reduction in the mid frequency range (500 to 4000 cps). Where somewhat higher continuous background noise levels exist due to exterior traffic or air conditioning equipment, the resilient elements (clips, separate studs, etc.) may be replaced by somewhat simpler single wall constructions. "Double" partitions can be quickly reduced to single partitions in noise reduction performance if rigid elements tie the separated sections together. In any case, the partition selected must be completely airtight and potential sound leaks through the edge termination of the partition, back-to-back electrical convenience outlets, penetrating pipes, inter-communicating doors and the like, must be avoided. A few of the points to watch in partitions are shown in Fig. 6. In general, one should look cautiously at any element that allows sound to by-pass the wall construction between rooms. This construction may be all for naught if operable sash in the exterior wall opens up in such a way to provide a convenient by-pass for sound from room to room.

Structure-borne Noise

Some noise generating devices act directly on the structure: wall mounted telephones, television and radio sets, luggage racks, etc. There is nothing more disturbing than to be awakened by a telephone ring that you find is not for you but for your neighbor. If at all possible, one should avoid mounting these elements on a common partition as indicated in Fig. 5. However, if necessary, they can be wall-hung by means of vibration isolation mountings using rubber and other elastic materials. In passing, one should note, too, that it may be possible to control the airborne noise of radios, TV's and telephones by means of volume limiters. Other sources of structure-borne noise are footfalls, falling objects, piping, air handling units and the like. The noises can be reduced by placing a resilient layer or mounting between the noise source and the structure. Carpet is an excellent control measure for reducing impact sound transmission between floors as are sponge rubber backed flooring materials.

The corridor-to-guest room privacy problem is usually solved by using a solid, tight-fitting or weatherstripped door and airtight, impervious wall construction. Carpet and sound absorbing ceilings in the corridors also help to reduce the impact sound as well as the speaking tube effects of the corridor in transmitting sounds throughout the building. Ventilating louvers in the corridor door are, of course, not desirable.

The bathroom-to-bathroom sound transmission problem is almost entirely solved by care in detailing. A double partition very often exists due to the pipe space requirements. However, recessed fixtures or common duct openings in the partition can be disastrous from an acoustical privacy viewpoint. Surface mounted or back-plastered fixtures and separate branch ducts to adjacent rooms are easy solutions if accomplished during rather than after the construction state. All pipe penetrations of walls and slab should be caulked or otherwise made sound-tight.

Motel Air Conditioning

By F. J. Walsh, Consulting Engineer, New York City

Systems for motels, and more particularly motor hotels, have a lot in common with the downtown hotel. There are some special considerations, however, due to the size and more speculative nature of these ventures. These are examined in this article, and system selection factors are considered.

Problems of motel or motor hotel heating and air conditioning are similar to those of the downtown or resort hotel. But certain of these require special attention because of the generally smaller size and speculative nature of this type of enterprise. They include: desired installation write-off, allowable depreciation for tax purposes, desired equipment life, operating cost, provision for expansion, provision for room shut-off, partial load operation, operation at minimum occupancy rate, maintenance requirements, satisfactory ventilation supply and exhaust, odor control, noise control, etc.

This article is concerned with air conditioning and heating design for motels having 40 units or more up to multi-story motor hotels of possibly 500 units. These large motor hotels might have five to eight stories and complete hotel facilities. (Design for heating only is not discussed.)

General Considerations

It is extremely important that the engineer understand what operating cost the motel owner can afford during each season of the year for heating, or ventilation or air conditioning. This can be estimated in advance for all occupancy conditions. Otherwise, a system might be recommended that would be too expensive to run much of the time.

Natural ventilation through operable sash should be considered for cooling during intermediate seasons unless certain factors preclude it such as: rooms sealed because of noise problem; objectionable atmospheric pollution; because architectural design treatment demands it (as in a deluxe operation).

Often heating is combined with cooling in the same distribution system. When these systems involve a central air supply system as in an all-air or an air and water induction unit system, operating costs can be excessive unless each cycle of the system is designed for shut-off and efficient part load operation. The solution to this may not be simple, and particularly where the air cycle employs high air velocities and pressures, as in a larger motel, this can never be neglected.

In a high velocity type air conditioning system present status of knowledge and problems to be encountered must not be overlooked. (See "Potentialities of High Velocity Air Conditioning," ARCHITECTURAL RECORD, September 1957.)

Criteria for System Selection

1. Factors to be set by Owner or Architect

Before the engineer can determine possible solutions for the project, the following must be discussed with the client and architect and explained in laymen's terms:

A. Quality of performance

1. Summer range, room temperature and humidity. (What do competitive facilities provide? What is necessary minimum?)

2. Winter heating. (Evenness of heat, avoidance of drafts, etc.)

3. Type of automatic or manual control.

4. Air distribution (absence of drafts, etc.)

5. Supply and exhaust ventilation provisions.

6. Filtering, smoke and odor removal required for ventilation supply air.

7. Filtering, smoke and odor dilution and/or removal in room.

8. Time allowed for newly rented unit to be brought to optimum condition, and at what time of day.

9. Allowable noise level and need for eliminating noise from air outlets, air ducts, fans and equipment, transfer through duct system or air intakes, central heating or cooling plant, etc.

B. Architectural limitations on heating and air conditioning equipment in rooms, and on location of central equipment, if used.

C. Budgetary limitations.

D. Minimum useful life of equipment.

E. Depreciation period for plant and equipment and interest rate or required rate of return on investment. (Depreciation may not be the same as that allowed for income tax purposes.)

F. Building orientation and concept, site planning, type and usual hours of occupancy, occupancy peak loads and time of occurence, range of occupancy percentages and when they will occur as to season and time of day.

G. Need for shut down of units or groups of units because of low percentage occupancy at times. Present or future range of occupancies (maximum-minimum) and when they will occur during the day or season. (Note: occupancies may be as low as 30 per cent.)

H. Quality of maintenance help available.

1. Maintenance staff.

2. Outside service.

I. Provision for expansion.

J. Decision to lease equipment (e.g., window a.c. units) or to use a particular type or make of equipment or type of system.

K. Standby equipment or capacity to be provided or other provisions to be made in design to meet specified contingencies.

L. Existing motel: allowable interference with occupancy and scheduling of installation.

M. Special occupancy suites or facilities (e.g., meeting rooms, suites used for conferences during conventions, restaurants, cocktail lounges, etc.). These require as much planning as for a downtown hotel.

N. Extent to which facilities for restaurant or other area are to be combined with room system facilities. When peak occupancy?

Factors Affecting Design and Operation

While self-contained room equipment inherently has a high operating cost, this is of little consequence because it runs only when the room is occupied.

Central Systems

Centralization of equipment brings with it a number of problems which require special planning in the original design.

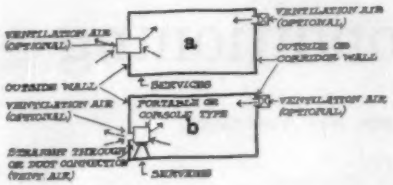
1. Efficient and stable operation of system at minimum or maximum occupancy. The occupancy rate has to be relatively high for efficient operation particularly with an all-air or air-water system unless special provision is made for shut-off of air and/or water to room units.

2. Shut off of service to units.

Motel Air Conditioning

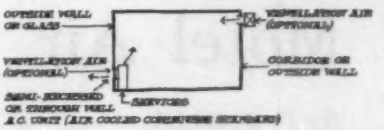
SELF CONTAINED ROOM AIR CONDITIONERS

WINDOW UNIT



(1) Steam or hot water heating coil available with some (B) models.

THROUGH WALL UNIT



(1) Unit available with hot water or steam coil for heating.
(2) Some units are available on special order with water cooled condensers eliminating need for opening through wall. Such unit can be located on interior wall.
(3) With water cooled condensers need central cooling tower or well pump installation.

	WINDOW UNIT	THROUGH WALL UNIT
1. FIRST COST	Lowest	Low
2. OPERATING COST [1]—COOLING	High to Highest	High to Medium
HEATING	Low to High (Reverse cycle)	Low
3. MAINTENANCE COST	Highest	High
4. LIFE OF SYSTEM (APPROXIMATE) a. EQUIPT. IN ROOM	Shortest	Short
b. PLANT & SERVICES	Medium	Medium
5. SERVICE CONNECTIONS	Electric, Steam, Hot Water	Electric, Steam, Hot Water, Drain
6. USED WITH SEPARATE RADIATION	Generally yes	Sometimes
7. RANGE OF USAGE a. MIN. NO. UNITS	No Minimum	No Minimum
b. MAX. NO. UNITS (BEST APPLICATION)	20 (but depends on quality of Motel)	40 (but depends on quality of Motel)
8. LEASING ARRG'T—ROOM UNITS	Yes	Yes
9. MAINTENANCE REQUIRED IN ROOM	Most	Medium to Most
10. MAINTENANCE STAFF REQUIRED	Least (outside service)	Least (outside service)
11. DEPRECIATION FOR INCOME TAX	Highest	Highest
12. QUALITY OF PERFORMANCE		
a. AIR DISTRIBUTION—COOLING	Fair to Poor	Fair to Good
HEATING	Fair to Excellent	Fair to Excellent
b. FILTERING DONE BY ROOM UNIT [2]	Fair	Fair
c. TEMPERATURE CONTROL—SUMMER	Fair	Fair
WINTER	Reverse cycle—Fair	Reverse cycle—Fair
	Heating Coil—Fair to Good	Heating Coil—Fair to Good
d. HUMIDITY CONTROL [2]—SUMMER	Poor to Good	Poor to Good
WINTER	None	None
e. ODOR REMOVAL IN SPACE [4]	Fair to Poor	Fair to Poor
f. NOISE OF OUTLET OR UNIT	Noisiest	Noisy
13. SPECIAL PROVISIONS REQUIRED TO SHUT OFF SERVICES TO UNIT	No	No

1. Depends upon unit shut-off and part load operating provisions, zoning controls, etc. Assume windows open in intermediate season.
2. See Text.
3. Depends upon ventilation provisions—see Text.
4. See Text.

(1) Use of Reverse Cycle (heat pump operation will be satisfactory down to about 45° F. —below that temperature, supplementary heat (e.g. electric strip heaters, panels, baseboard required).

(2) Bathroom heating may require special consideration to achieve minimum cost. Where reverse cycle heating is satisfactory for room, electric heat for bathroom is suggested.

ROOM AIR HANDLING UNITS

(1) Induction unit—provides balancing, sound attenuating and shut-off devices for primary air.
(2) Heating accomplished with room unit unless existing heating system is retained or direct expansion coils are used.
(3) Units can use well water instead of mechanically chilled water.

ALL AIR SYSTEM

(1) Can re-use any existing perimeter radiation or use new perimeter radiation except when using (A) or (D).

	FAN-COIL UNIT Motor Driven Fan Direct expansion coil or water coil	INDUCTION UNIT Room air induced past water coil by primary air flow past nozzles	SINGLE DUCT SYSTEM Zone Reheat and Volume Control	SINGLE DUCT SYSTEM Volume Control	DOUBLE DUCT SYSTEM
	Medium to High	High	Medium to High	Medium to High	Medium to Highest
	Medium to Lowest	Medium to High	Medium to High	Medium to Highest	Medium to Highest
	Low	High	High to Highest	High to Highest	High to Highest
	Medium to High	Medium	Low to Lowest	Low to Lowest	Low to Lowest
	Medium	Medium to Long	Longest	Longest	Longest
	Medium to Long	Medium to Long	Longest	Longest	Longest
	Electric, Water, Drain, Air	Air, Water, Drain	Air	Air	Hot and Cold Air
	Sometimes	Sometimes	Sometimes	Sometimes	Sometimes
	Chilled water coil—40 units Direct expan. coil—10 units	100	Low pressure—6 units High pressure—100 units	Same	Same
	Chilled water coil—no max. Dir. exp. coil—40/compr.	No maximum	Low pressure—20/system High pressure—400/system	Same	Same
	No	No	——	——	——
	Medium	Medium to Little	Least	Least	Least
	Small system—little (if outside serv.) Larger system—most	Most	Small system—little Large system—most	Same	Same
	Medium	Medium	Small system—medium Large system—lowest	Same	Same
	Fair to Good	Fair to Good	Poor to Excellent	Poor to Fair	Poor to Excellent
	Poor to Excellent	Poor to Excellent	Poor to Excellent	Poor to Fair	Poor to Excellent
	Fair to Good	None to Poor	Done at Central Fan	Done at Central Fan	Done at Central Fan
	Good to Excellent	Good to Excellent	Fair to Excellent	Fair to Excellent	Fair to Excellent
	Fair to Good	Good	Fair to Excellent	Fair to Excellent	Fair to Excellent
	Good to Excellent	Good to Excellent	Poor to Excellent	Poor to Good	Poor to Excellent
	None to Good	Good	Poor to Good	Poor to Good	Poor to Good
	Fair to Excellent	Fair to Good	Good to Excellent	Good to Excellent	Good to Excellent
	Quiet to noticeable (depends on fan motor and vent. air supply)	Quiet to noticeable (depends on nozzle-unit combination and characteristics of balancing air valves, system static pressure.)	Quiet to noisy—depending on attenuator boxes, air valve characteristics, static pressure control provided, system static pressure.		
	Water or refrig.—no. Air—yes (esp. if H.V.)	Water—no. Air—yes.	Yes	Yes	Yes
		1. Induction Unit System generally uses high velocity air distribution.	(1) Low pressure duct systems are limited in general to small installations. (2) Larger installations will probably require high velocity duct systems with no return air to central unit because of space and cost considerations. Operating costs will be excessive without shut-off and efficient part load operating provisions.		

3. Standby or breakdown provision since service has to be provided on a 24 hour basis.
4. Space requirements for plant.
5. Provision for expansion.
6. Zoning and central plant control required.
7. Noise problem.
8. Distribution of services from plant—above or below ground and how run.

Centralization may be considered for service to all units (e.g., central chilled water) or to groups of units depending on site planning or cost factors. Where separate groups of units are treated for air conditioning, for example, this might be accomplished using one package air conditioner and a duct system or one remote refrigeration compressor unit with refrigerant piping to fan coil units in the rooms.

The engineer should realize that for the motel application, particularly the multi-story motor hotel, size of the central plant requires very careful evaluation of storage, diversity and occupancy factors. For example, using factors established by the Air Conditioning and Refrigeration Institute (Standard 530, 1956), which are based on statistical evaluation of existing installations, in some cases it might be possible to use a plant capacity 25 per cent smaller that that which conventional peak load calculations would indicate. Such factors must be used with judgment. Type and design of system used can limit possible savings.

Where there is a possibility of using well water for cooling purposes it should be investigated very carefully and decided upon only after complete laboratory analysis indicates expensive treatment is not required.

Underground services can be considerably more expensive than overhead services and should be avoided wherever possible.

Where restaurant or other facilities are provided, central plant capacity and equipment layout should be predicated on probable individual loads (peaks will not occur simultaneously) and different hours of operation.

Savings will result if additions radiate from a central location.

Room Equipment and Controls

Some mention has already been made of factors affecting room load and types of systems available.

Because internal loads in a motel application are low and a small part of the total, zoning control should be used insofar as possible. But since the occupants will desire some control of room conditions this should be supplemented by a trimming adjustment, generally manual. (This does not apply to individual self-contained room equipment which must be operated by a room thermostat).

Air distribution where occupants are sleeping can be critical and air must not be blown toward them.

Noise can be a problem, particularly with high velocity systems, and here characteristics of fans, air valves and nozzles, and attenuating boxes should be carefully specified.

Where the outdoor noise level is of some consequence (but still not disturbing) a self-contained window or through-the-wall unit may be good enough.

The following are the sources of noise from which difficulty may arise: a) unit vibration; b) fan noise; c) air outlet noise; d) balancing damper noise (air valve noise in a high velocity system); e) flow of air in duct; f) cross talk through ductwork; g) outside noise transmitted through outside air intake at room unit.

If outside noises are of such character and level as to require double glazing to shut them out, special attention will have to be given to noise level of the air conditioning system too.

Most economical location of room equipment or outlets will depend on number of stories, presence or absence of corridors, sill height, type of roof, etc. In general minimum cost will result when run of service piping, ducts, etc., are at a minimum and run in convenient locations. Direct expansion refrigerant piping runs must be kept short to be economical.

Filtering and Odor Removal

ODORS: To keep room air free from smoke, dust and odors, the following must be done:

1. Outside or ventilation air must be made free from contamination.
2. Smoke and odors in the room must be diluted by adequate, clean ventilation air or adsorbed (e.g., activated charcoal). Masking odors alleviate only the odor problem and are of questionable effectiveness.

Solution to the first problem is usually simple, although sometimes expensive.

Solution to the second problem will be difficult and expensive, if not impossible, unless a satisfactory solution to the first is provided.

With an "all-air" system, the smoke and odor problem can be solved at a central point. All other systems have individual room cooling coils which operate alternately wet and dry due to moisture removal, and inherently aggravate the problem in the cooling season.

In industrial or business areas, odors, smoke or dust in the atmosphere may be the principal determinant of equipment for high quality air supply.

Removal of smoke and fine dust requires electric filters or high-pressure drop dry filters.

Air washers and sprayed coils can remove a small amount of odors and gases, but the use of activated charcoal is the accepted solution.

Operating cost with activated charcoal can be compensated through savings in refrigeration capacity and by making possible the use of outside air for ventilation which might otherwise have objectionable odors.

It is known that a cold surface (e.g., a coil), especially a wet one, has a greater odor holding capacity than a warm dry one. It will adsorb odors from the room, particularly if the air is forcibly circulated over the surface.

These coil odors or "wet coil" odors commonly occur and are tolerated unless they are definitely objectionable. They result principally from retention and release of tobacco odors and body odors from the cooling coil during the air conditioning season.

It is uneconomical to design a system to have a completely dry coil, and no existing system operates entirely that way especially under adverse conditions.

Effective filtering is needed to prevent build-up of foreign matter on the coil which can add to its odor holding capacity. It is also important to make sure that convenient access is provided for cleaning the coil.

Most of the odor load will be picked up when the coil is wet and cold, and released on the "off" cycle or when the coil temperature rises and the moisture evaporates. Therefore, outside of the cooling season, coil odors will be of little consequence.

Smoke removal is generally accomplished through providing sufficient supply and exhaust ventilation, but this may not always be possible.

The obvious solution, where the quality of performance requires it and room units with cooling coils are used, is to provide activated charcoal filters on the clean side of the filtering media at each unit. These filters are now readily available in any size, and effectively remove both smoke and odors.

Their cost will be insignificant in relation to total system operating costs.

continued on page 312

Approach Bridges: United States Air Force Academy

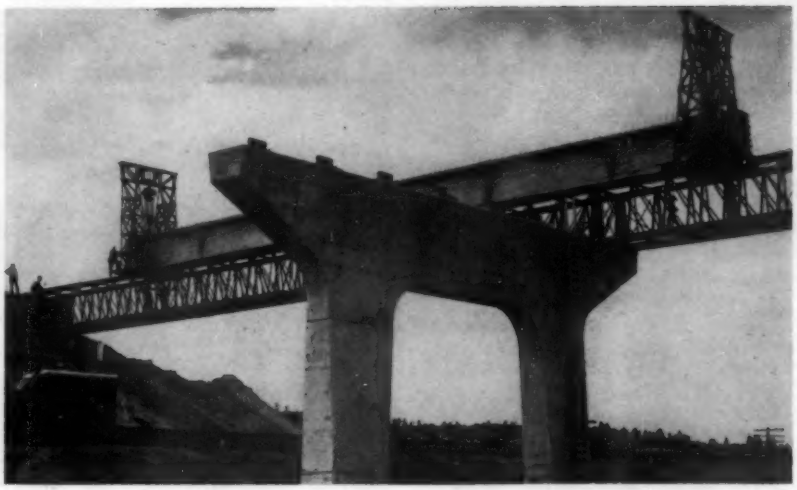
Skidmore, Owings & Merrill: Architects-Engineers

Thanks to the close collaboration between Skidmore, Owings & Merrill's design and engineering staffs, the access bridges to the U. S. Air Force Academy express their structural efficiency in sleek lines that form a fitting prelude to the architecture of the main campus.

The six bridges—four highway and two railroad—which link the site with arteries along its border all have superstructures of precast, prestressed simply-supported girders with cast-in-place deck. The largest, a four lane, five-span highway bridge, (above), is supported on portal type piers; the other highway bridges are two, three and four-span twin bridges with separate two lane roadways supported side by side on T-shaped piers (below). All four have equal span lengths (12 ft between supports), and girder spacing (9 ft on center). Although the girders used for the two-span railroad bridges which carry tracks over the main roads of the academy site have the same cross section as those used for the high-bridges, they are shorter (72 ft) and closer together.

The fabrication advantages gained by choosing precast, prestressed members rather than continuous cast-in-place girders were multiplied by the use of equal span lengths and identical sections, which made it possible to re-use the formwork and repeat common details. According to SOM designer, Walter A. Netsch, Jr., the configuration of the girders was the result of the design team's efforts "to establish the character and profile of the technological structure in esthetic terms." The search was for a form that would express the catenaries through which the members were to be prestressed and their relations to the plane of the girder at various distances from the end—and would at the same time be easy to precast.

The shape finally arrived at was a modified "T" which tapers from 25 in. at the base to an 8 in. neck



Precast, prestressed concrete girders for U. S. Air Force Academy bridges were moved from casting beds into their final position by six-wheel gantries which rolled on rails extending from the road bed to temporary trusses laid across the first two spans. After the girders had been lowered onto the piers, the trusses were removed and used to bridge the remaining spans. Diaphragms between girders were cast separate from the main slabs, which were also poured-in-place

near the top, and flares out in a 36 in. top flange. To increase shear and end-block bearing resistance, the girders are thickened gradually near the ends. Each is reinforced with twelve 16-wire tendons sheathed in flexible metal conduit and draped parabolically in the vertical plane.

The 5500 psi concrete used for the girders was field cured by spraying with a non-staining membrane. When it reached a minimum compressive strength of 4500 psi (in about six days), the members were post-tensioned with a 1616 kip prestress force. The cables were then grouted under an average pressure of 50 psi. To verify the girder design, one 120 ft unit was tested by L. Boduroff & Associates, consulting engineers to the general contractor.

Because the uneven terrain would have made it difficult to cast the girders near the foot of the piers or to place them with cranes, they were formed in plywood side forms at one end of each bridge and moved straight forward into their final position on the piers. The unique handling method developed by the contractor involved the use of two gantries which rolled on rails along each side of the casting beds. These rails extended to the edge of the bridge abutment and on across the tops of light triangular steel trusses over the first and second spans, forming a temporary "bridge" from which the girders could be placed.

Fifty ton chain blocks on the gantries were used to lift the precast members clear of the casting beds, and to support them while the gantries carried them to a point directly over their final position. They were then lowered between the steel trusses to the bearing seats. After two spans of girders had been erected, the diaphragms between them were formed and poured, and the deck was concreted. The girders for the remaining spans were placed by rolling them over rails laid on the completed portion of the deck, and on across the temporary trusses.

The diaphragms, which are designed to carry shear and moment stresses under non-uniform loads on the deck, were cast on 20 ft centers, separate from the main slab. Because no intermediate stiffeners are required, the girder elevations retain a clean, unbroken surface.

A 7 in. poured-in-place slab forms the deck—and also solves the problem of joining the precast units. Composite action between the deck and its supports was assured by upsetting the top flange 3 in. into the slab and providing shear keys and hold-down stirrups.

John Merrill of Skidmore, Owings & Merrill's Chicago office is in charge of the academy project, with Walter Netsch in charge of design. The team responsible for the design of the bridges also included Dr. Fazlur R. Khan, senior structural designer, and Andrew J. Brown, chief structural engineer.

more roundup on page 252

Practical, durable concrete block has been having its face lifted by a variety of treatments. Among them: patterning as shown at right, perforating as in the exterior and interior "screens" below

Concrete Block Comes of Age

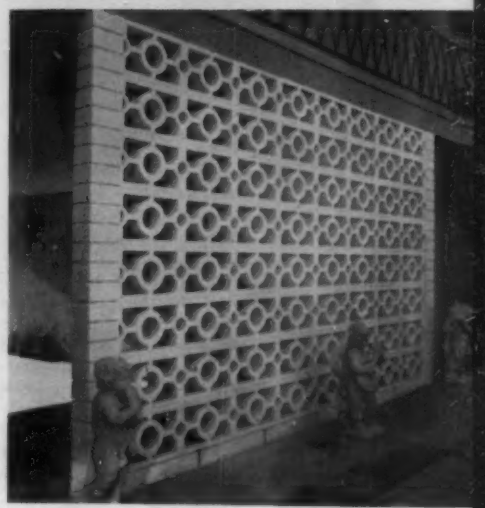
Concrete block made its debut into the building field as a serviceable and inexpensive—but not very glamorous—masonry unit. One of the earliest steps in its evolution was the departure from the standard 8- by 16-in. face. Then came color. Now the design possibilities of concrete masonry are being increased still further by the introduction of an ever wider range of sizes, shapes and patterns.

Among the recent developments is the *Shadowal* block introduced by the National Concrete Masonry Association early last spring. Similar to standard blocks in size (8 by 8 by 16 in.), color and physical characteristics, it differs from them in that a pattern is cast into its surface. Three-eighth inch recesses angling across two of its corners leave a raised trapezoid in the center of each block. When used together or in combination with other modular blocks (photo above), the faceted *Shadowal* units lend themselves to a variety of low-cost decorative wall treatments. *National Concrete Masonry Assoc., 38 S. Dearborn St., Chicago 3, Ill.*

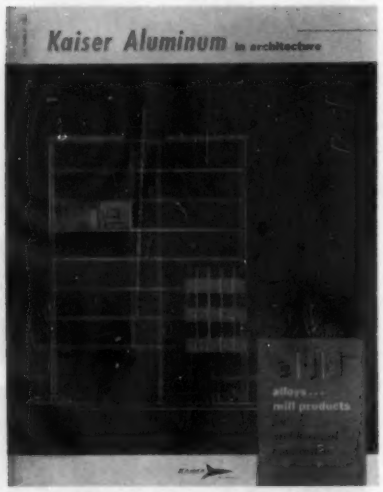
The latest innovation in concrete masonry to hit the Southern California market is the perforated block with triangular and diamond shaped openings shown at center right. Suitable for use as either a veneer or freestanding decorative unit, the *Vista* block offers a wide choice of possible applications. Those suggested by the manufacturer include: decorative screen to shield large glass areas from sun and wind; vertical panels in arcade walls to relieve unbroken surfaces and achieve an interesting play of light and shadow; surrounding veneers to accent door and window openings; and garden walls, benches, step risers and so forth. The blocks, which measure 4 by 8 by 16 in., can be used in conjunction with standard 4-, 6- or 8-in. masonry units. Lightweight and easy to handle, they are available in gray, pink and beige. *O'Kelley-Eccles Co., 4846 Azusa Canyon Rd., Baldwin Park, Calif.*

Screening walls for patios, entries, windows and parking areas can be constructed inexpensively with the newly-introduced *Granada* vented concrete block (bottom right). The pierced walls maintain privacy; their symmetrical openings admit ample light and air. According to its manufacturer, the economical grill block can be used for relatively high walls with the proper placement of horizontal steel or concrete beams and the regular spacing of horizontal supports. The units, which measure 12 by 18 in., can be laid to emphasize either the vertical or horizontal lines. Gray in color, they can be easily painted to contrast or harmonize with interior or exterior decor. *General Concrete Products, Inc., 15025 Oxnard St., Van Nuys, Calif.*

more products on page 268



Office Literature



Kaiser Aluminum in Architecture (A.I.A. 15-J) offers up-to-date information on a wide range of aluminum alloys and mill products for architectural applications. Topics covered include extrusion and sheet availabilities, alloy properties and uses, porcelain enamel on aluminum and other surface treatments, aluminum characteristics, and specifications for architectural aluminum work. An alloy selection table lists recommended alloys for architectural uses and comments on the general characteristics of each. Another useful table shows approximate color matches obtainable by anodizing the most commonly used aluminum alloys. 24 pp. *Kaiser Aluminum & Chemical Sales, Inc., Dept. NR-8, 919 N. Michigan Ave., Chicago 11, Ill.**

High Velocity Duct Design

Special 24 page manual on the design of ducts for all-air high velocity heating and air conditioning systems contains performance tables, step-by-step design procedure, schematic layouts, and information on duct construction and duct insulation. *Anemostat Corporation of America, 10 East 39th St., New York 16, N. Y.**

Protective Coatings Manual

Features actual color chips of 102 different coating items and includes complete sections devoted to methods of surface preparation, use of primers and finish coatings, and the availability of custom coatings as required. 36 pp. *Rust-Oleum Corp., 2799 Oakton St., Evanston, Ill.**

Hermetic Centrifugals Catalog

Outlines complete selection information for 28 standard models in the Carrier line of hermetic centrifugal refrigerating machines. Data provided includes rating tables, compressor-motor combinations, cooler and condenser sizes, kilowatt input, machine weight and dimensions, and other significant information. Catalog No. 19C-104. *Carrier Corp., Syracuse, N. Y.**

Architectural Porcelain Products

Discusses Seaporcel porcelain panels for building exteriors, and *Seaporclad* curtain wall insulated, laminated and "sandwich" panels. Details and illustrations of eighteen building and construction examples are also included. 8 pp. *Seaporcel Metals, Inc., 28-20 Borden Ave., Long Island City, N. Y.**

Remote Air Conditioning Units

(A.I.A. 30-F-1) Gives complete engineering data—including cooling and heating capacity ratings, performance graphs, and information on accessories and controls—for *FEDAIR* remote type air conditioning units. 20 pp. *Fedders-Quigan Corp., Heating Div., Lalor & Hancock Sts., Trenton 7, N. J.**

Fir Plywood (A.I.A. 19-F)

Three-section catalog presents basic information on fir plywood standard grades and specialty products. The first section includes such topics as code requirements, properties and design data, construction details and structural drawings, and engineering data for plywood concrete forms. The other two sections cover plywood properties for product design, and descriptions of specialty products. *Douglas Fir Plywood Assoc., 1119 A St., Tacoma 2, Wash.**

Util-A-Vent Ventilating Units

(A.I.A. 30-D-1) Bulletin UVS-104 includes complete performance tables, engineering data, selection and installation information and full specifications on belt-driven package ventilating units with either forward curve wheels or backward blade non-overloading wheels. 24 pp. *General Blower Co., Morton Grove, Ill.*

Metal Letters (A.I.A. 15-R-1)

Catalog M-58 describes Spanjer's line of architectural metal letters, explains methods for specifying and ordering special-design lettering, and details procedures for mounting the letters on masonry and other building materials. 22 pp. *Spanjer Brothers, Inc., 1160 N. Howe St., Chicago 10, Ill.**

Electric Unit Ventilator

Descriptive bulletins and sample specifications illustrate and describe four models in the *Chromalox* line of automatic electric unit ventilators. *Edwin L. Wiegand Co., 7500 Thomas Blvd., Pittsburgh 8, Pa.**

Whiting Crane Handbook

Gives complete crane engineering data, including information on (1) general crane design and various types of cranes with related equipment, and (2) specifications, clearances, speeds and specific details of equipment manufactured by Whiting. Hard cover, 176 pp. Request on letterhead. *Whiting Corp., Harvey, Ill.*

Aluminum Expansion Joint Covers

(A.I.A. 4-E-11) Catalog No. 6 contains selection information and details for aluminum expansion joint cover assemblies. 4 pp. *Architectural Art Mfg. Co., 3001 N. Hillside, Wichita 15, Kansas*

Air Diffusing Grilles

Contains complete engineering information—including vertical and horizontal projection, ceiling effect, and relationship of active to inactive grille sections—on Titus extruded aluminum linear type air diffusing grilles. 16 pp. *Titus Mfg. Co., Waterloo, Iowa**

Instantaneous Water Heaters

Covers application, selection and installation of indirect type instantaneous water heaters for large buildings. 8 pp. *Bell & Gossett Co., 8200 N. Austin Ave., Morton Grove, Ill.**

**Additional product information in Sweet's Architectural File, 1958*

more literature on page 300

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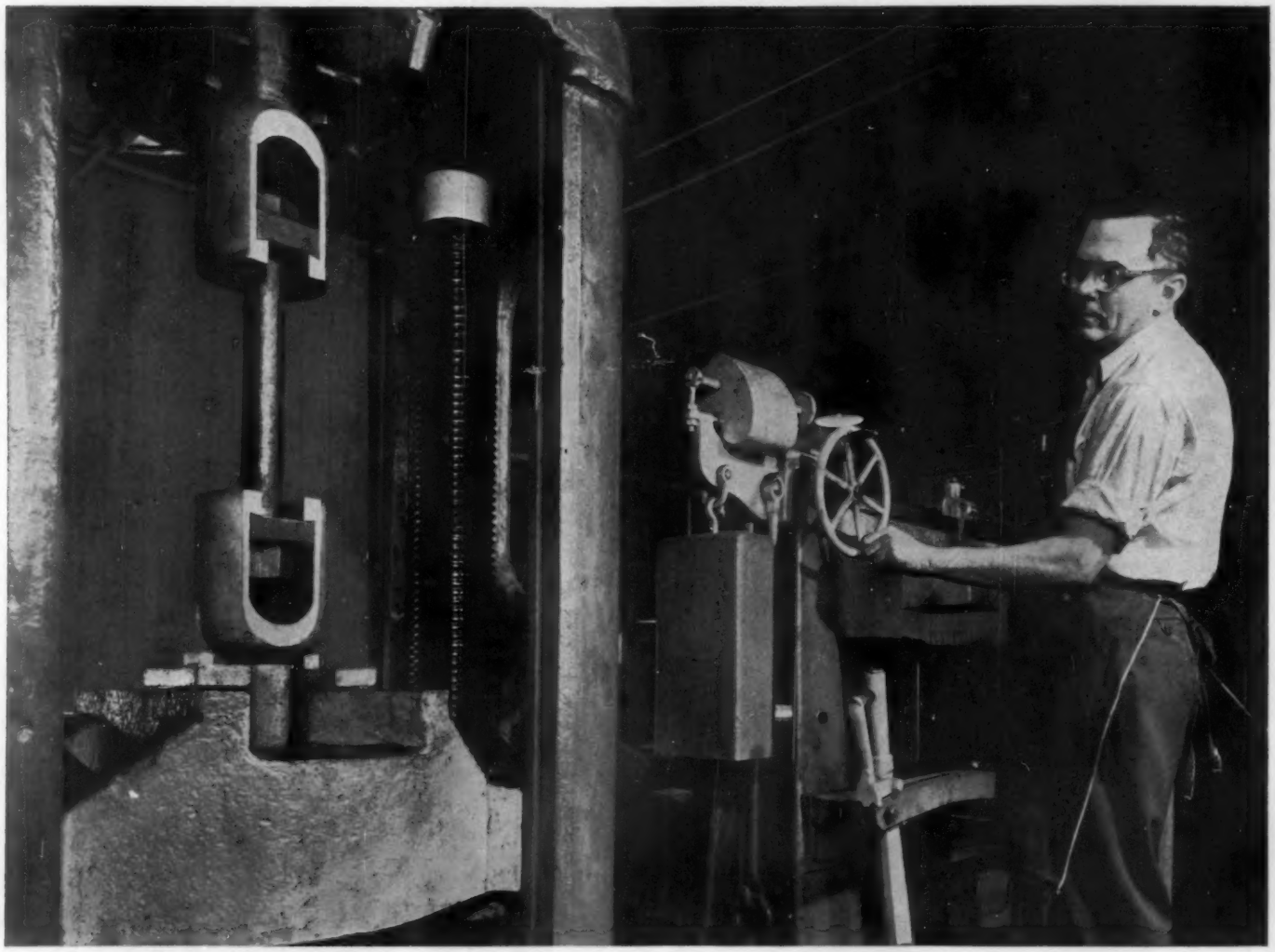

In this tensile testing machine, Bethlehem High-Strength Structural Bolts are tested full size in commonly used diameters. We can test bolts as large as 2 ½ in. diameter, such as the one shown.

We test high-strength bolts at full size to determine their strength on the job

There's no guesswork about performance when you use Bethlehem High-Strength Structural Bolts. The strength of these heat-treated carbon steel bolts is controlled by periodic tests made on full-size bolts in the sizes commonly used in bridge and building construction.

All heat-treatment lots of Bethlehem High-Strength Bolts are tested in accordance with the requirements of ASTM Spec. A-325-55T, which covers all sizes of bolts for numerous applications. Because of the full-size testing, used in preference to standard test bars or turned specimens, any non-uniformities in the bolts, either in structure or tensile properties, can be fully evaluated.

If you would like to have more information about the manufacture, testing, or installation of high-strength structural bolts, simply write the Bethlehem sales office nearest you.

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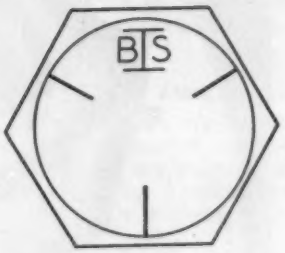
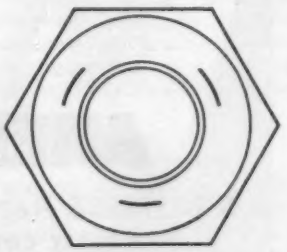
BETHLEHEM STEEL



Bethlehem High-Strength Bolts are identified by trademark, plus three raised radial lines, on bolt head.



Typical American Standard Heavy Semifinished Nut used with high-strength bolt. It meets ASTM Specification A-325, and is identified by three depressed arcs in the crown.

USEFUL CURVES AND CURVED SURFACES: 28—Geodesic Domes

By SEYMOUR HOWARD, Architect, Associate Professor, Pratt Institute

The most perfect development of the geodesic dome has been made by R. Buckminster Fuller. Combining the tetrahedron and the sphere, it is derived from his concept of "energetic geometry." Of all regular convex polyhedra the tetrahedron encloses the minimum of space with the maximum of surface, and is the stiffest form against external and tangential pressures. The sphere encloses the maximum of space with a minimum of surface and is the strongest form against internal or radial pressures.

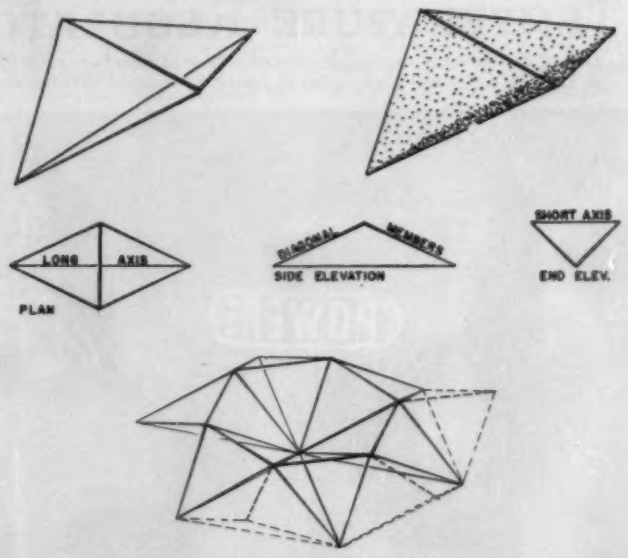
In the Fuller dome a space-frame, built up of elongated tetrahedra, is given the overall shape of a sphere. The basic unit is rhombus or diamond shaped in plan, triangular in elevation.

The unit may be built of struts or, in the type being manufactured by the Kaiser Aluminum Co., of a bent sheet, stiffened by edge flanges and with one strut across the short axis.

The tetrahedral units are combined to form a complete framework by joining six units together. Assuming the diagonal members to be fastened already to the short axis and long axis members, a six-way fastener is required at the vertices of the short axes. (As the units are combined to cover the whole sphere, there will be a minimum of 12 cases where five instead of six units come together. (See sheet 25 for explanation.)

The framework is dimensioned so that all the long axis vertices of the tetrahedra lie on a sphere. The struts forming the long axes thus lie along chords of geodesic arcs. The other struts are placed to lie outside the surface of the sphere and are dimensioned to give the depth of frame considered necessary for stiffness. (In the aluminum dome manufactured by Kaiser this depth is 12 in. and is used for their standard dome with a sphere radius of 80 ft., giving a base diameter of 145 ft and a rise of 49½ ft, and is even proposed for a dome with a sphere radius of 112 ft, base diameter 203 ft.)

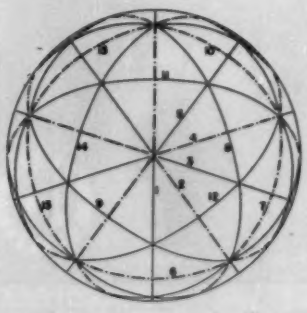
TETRAHEDON UNITS



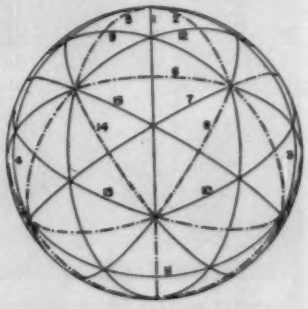
The structures designed according to the information in this article are covered by United States Patent No. 2,682,235 and Canadian Patent No. 512,422 granted to R. Buckminster Fuller. They include any building framework designed with an overall pattern of three-way great circle gridding.

The method of subdividing the surface of the sphere to find the correct position of these long axis vertices is as follows:

1. Divide the surface of the sphere into 20 equilateral spherical triangles. Graphically this can most easily be done by starting with icosahedron (see Sheets 26 and 27) and joining the vertices by geodesic arcs instead of by straight lines. All the angles of the equilateral triangle are 72°; the sides are 63° 26′ 5.47″ or 1.107147 radians. This is a spherical icosahedron and is the maximum number of equilateral triangles into which a sphere can be divided. Usually only five of these equilateral triangles would be used, making a dome which is one-quarter of a sphere, with a $\frac{\text{rise}}{\text{span}}$ ratio of about 3. The method of division can be carried out over the whole surface of a sphere, however, and will be described in this way.



PLAN
Plan of opposite side is identical, but rotated through 36°

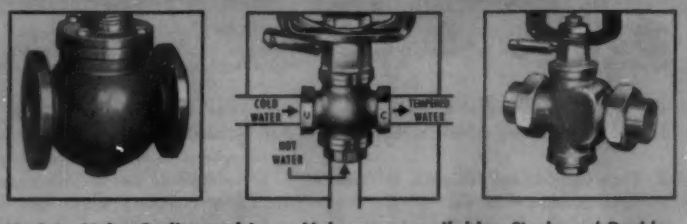


ELEVATION
Elevation from other side is identical, but turned upside down

2. Draw the medians of each of these triangles, dividing each side in half. This is the same as extending the sides of all triangles to form 15 complete great circles. These lines will be the only complete symmetrically spaced, great circles on the sphere, no matter how much further it is subdivided. (In the diagrams the icosahedral division is shown with a dot-dash line, the medians and other subdivisions with a full line.)

POWERS No. 11 Self-Operating
TEMPERATURE REGULATOR

One of Powers many controls. It automatically hold temperature constant at the right point and prevents losses caused by wasteful OVER-heating.

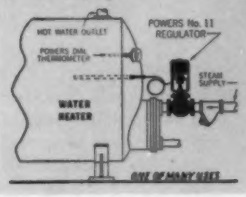


Various Valve Bodies and Inner Valves are available. Single and Double Seat Valves thru 2" have rugged bronze bodies with bronze union connections for quick, easy installation. For further information write for Bulletin 329.

(c33r)

Why It Gives
BETTER CONTROL
and Saves More Money

Often repays its cost 3 to 6 times a year when used on:



Water Heaters
—
Industrial Processes
—
Heat Exchangers
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Fuel and Crude Oil Heaters
—
Air Compressors Diesel Engines

ONLY POWERS No. 11 REGULATOR
Offers ALL These Advantages

When you specify or buy a Powers No. 11 Regulator you can be sure that its performance will confirm the wisdom of your choice. Check its Quality Features—

- **Bellows has 50% more power** than used in the majority of regulators. The heart of a self operating regulator is its bellows. Powers with its 50% greater effective area gives better control and its durable 2 ply bellows outlasts ordinary single ply.
- **Powers New 590-LONG-LIFE Valve Packing** marks an important milestone in the reduction of maintenance. It has a low friction factor and outlasts others by a big margin.
- **Valve stem lubricator** with silicone grease aids easy movement of highly polished stainless steel valve stem and reduces drying out of packing.
- **60° F. Temperature ranges.** Control system is sensitive to temperature changes within 1 to 2° F.
- **Durable Construction.** Materials used are corrosion resistant.

No. 11 Temperature Indicating Regulator

has a big easy to read 4" dial thermometer. It gives a quick check of controlled temperature and provides an accurate guide for adjusting regulator.

A feature originated by Powers in 1930.

- **Powers Nationwide Service and 24 Hour Delivery** in the U. S. and Canada are important time and money saving advantages.

If you have a temperature control problem, call your nearest Powers office or write us direct.

- **Use Powers 65 years of experience and engineering know-how** to help you select the right type temperature regulator and right size valve. Both are essential for best control.

THE POWERS REGULATOR CO.

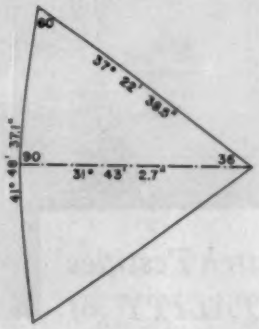
Skokie, Ill. | Offices in 85 Cities in U.S.A. and Canada | See your phone book

Automatic Temperature and Humidity Control Since 1891

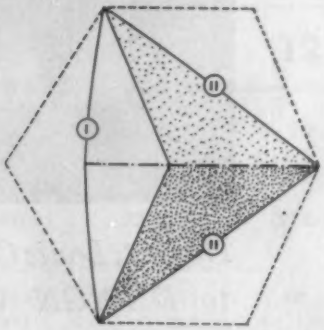
USEFUL CURVES AND CURVED SURFACES: 29—Geodesic Domes

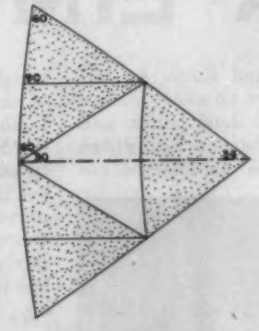
By SEYMOUR HOWARD, Architect, Associate Professor, Pratt Institute

3. The medians divide each equilateral triangle into six identical spherical right triangles, with the angles 90°, 60° and 36.° On the complete sphere there are 6 x 20 or 120 of these right triangles.
4. Pair off the 120 right triangles into 60 isosceles triangles. The apex angle is 72°, the two base angles are each 60°. The lengths of the two equal sides are 37° 22′ 38.5″ (0.652358 radians); the length of the base 41° 48′ 37.1″ (0.729727658 radians). The altitude is 31° 43′ 2.7″ (0.553574 radians) or half the side of the original equilateral triangle.
5. The 60 identical spherical isosceles triangles are further subdivided by using the base as the measuring line. The base is divided into any even number of equal arcs, called the "frequency" and referred to by the Greek letter nu ν. From each point of division a great circle arc is projected out at 90° to the base across the triangle until it intersects the other side. The simplest cases in order are:

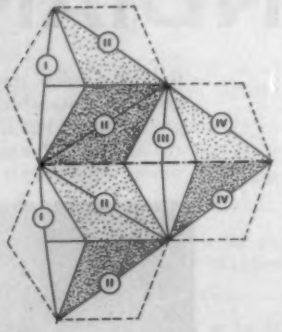


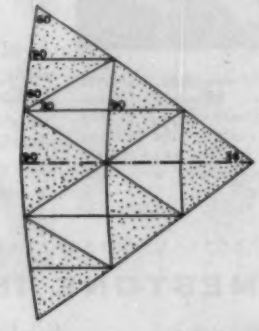
6. The minimum number of divisions or the smallest "frequency" is 2. For $\nu=2$, the only arc projected is the altitude of the isosceles triangle itself. The lengths of the long axes of the tetrahedra or diamonds (marked as I and II) are the lengths of the sides of the triangle. The dimensions are given on sheet 30. In the plan of the basic isosceles triangle we now have three "half" diamonds, the other halves being provided by the neighboring triangles (shown here dashed). The diagonal struts and the short axis struts are above or outside of the sphere. There are a total of 3/2 x 60 = 90 diamonds for a complete sphere.



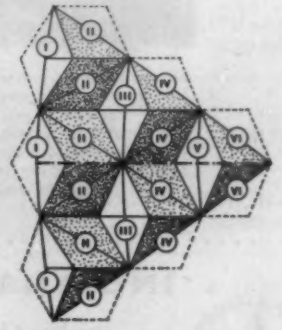


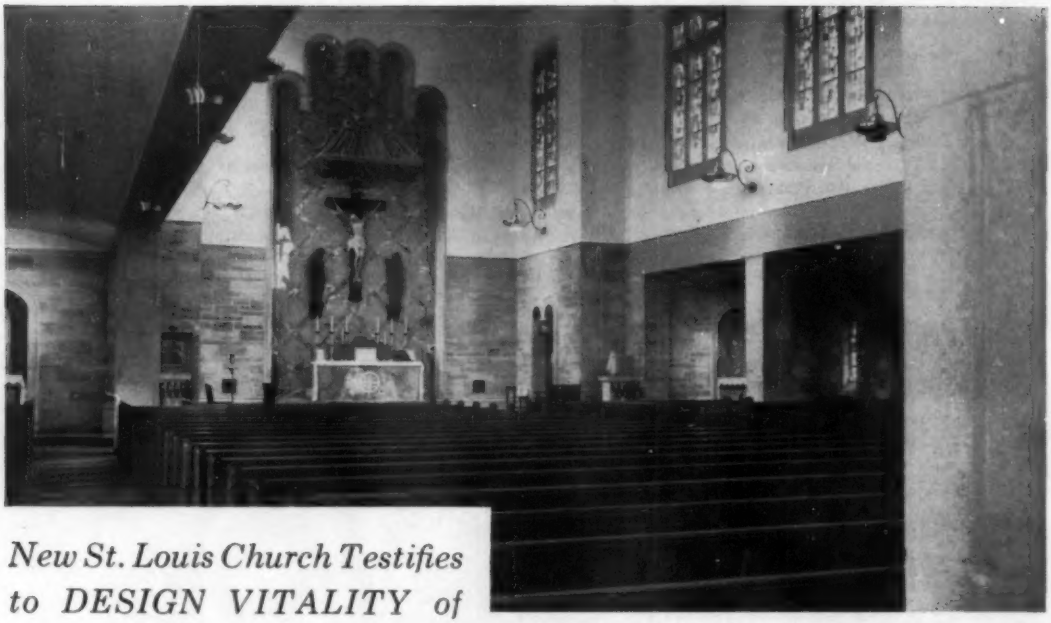
7. For a "frequency" of 4 ($\nu = 4$), the base is divided into four equal arcs. Three arcs at 90° to the base are projected into the triangle from the points of division; and two additional arcs are projected at 60° to the base from the second or center point of division. All calculations can be performed on the basis of the formulas for spherical right triangles (this Sheet will appear in a subsequent issue). These 60° lines divide the large isosceles triangle into four smaller, non-identical isosceles triangles of three sizes. The sides of these triangles are the long axis diagonals of the tetrahedra or diamonds. They are marked I, II, III and IV and the lengths are tabulated on Sheet 30. We now have four types of diamond and a total of three complete and six half diamonds within the plan of the basic isosceles triangle. Thus there are 6 x 60 = 360 diamonds in the complete sphere.





8. For a "frequency" of six ($\nu = 6$, the base is divided into six equal arcs. Five arcs at 90° to the base are projected into the triangle from the points of division; and two additional arcs are projected at 60° to the base from both the second and fourth points of division. These 60° lines divide the basic isosceles triangle into nine smaller isosceles triangles of five sizes. The sides of these triangles are the long axis diagonals of the tetrahedra or diamonds. They are marked I, II, III, IV, V and VI; the lengths are tabulated below. We now have six types of diamonds and a total of nine complete and nine half diamonds in the plan of the basis isosceles triangle. Thus there are 13½ x 60 = 810 diamonds on the complete sphere.





HOLY INNOCENT CHURCH, ST. LOUIS, MO., HARRY IHMSEN HELLMUTH, ARCHITECT

New St. Louis Church Testifies to DESIGN VITALITY of

INDIANA LIMESTONE

Rabbeted sills, mullions and lintels for art glass windows which require no metal frames, precision-cut moldings and door jambs, and an interior of random Indiana Limestone veneer demonstrate the wide and effective use which architect Harry Ihmsen Hellmuth makes of this time-proven material in designing St. Louis' new Holy Innocent church. "During the 50 years that we have been designing religious structures and other buildings throughout the United States, Indiana Limestone has proven its versatility, its economy and maintenance-free quality to such a degree that we rarely consider other materials for use upon institutional structures."

Myron Oudin, Construction Superintendent, Alberici Construction Company, St. Louis, Missouri: "Accurately cut, each piece individually keyed to the specific stone blueprint by the supplier, the Indiana Limestone provided for this job, enabled us to greatly streamline our construction procedures with substantial savings in time resulting."

"We find that the use of Indiana Limestone because of its variety of shades and textures, not only relieves monotony, but at the same time, effects that calm, ordered attitude desired in churches and institutional buildings . . . a unique duality of interest and conservatism."

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USEFUL CURVES AND CURVED SURFACES: 30—Geodesic Domes

By SEYMOUR HOWARD, Architect, Associate Professor, Pratt Institute

9. This procedure can be continued without limit. In every case:

a) The number of smaller isosceles triangles into which the basic isosceles triangle is divided is $\left(-\right)^2$.

b) The number of types of tetrahedra or diamonds is equal to the frequency number ν (number of divisions of the base.)

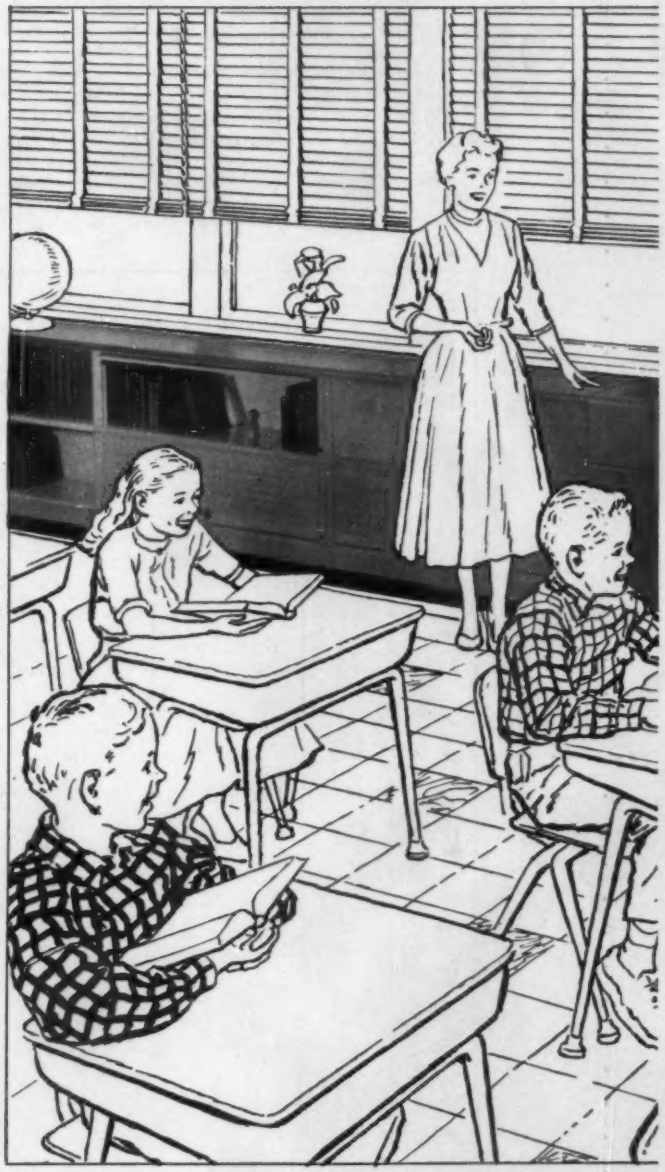
c) The number of tetrahedra or diamonds in one of the basic isosceles triangles is $\frac{3}{2}\left(\frac{\nu}{2}\right)^2$. Since there are 60 basic isosceles triangles, the number of tetrahedra to a complete sphere is $90\left(\frac{\nu}{2}\right)^2$.

The following table gives the lengths of the long axes of the tetrahedra for different frequencies. The lengths are measured as geodesic arcs along the surface of the sphere.

Frequency ν or number of divisions of base		2	4	6	8	10	12
Number of types of tetrahedra		2	4	6	8	10	12
Number of tetrahedra to complete sphere $90\left(\frac{\nu}{2}\right)^2$		90	360	810	1440	2250	3240
LENGTHS OF LONG AXIS DIAGONALS IN DEGREES AND RADIANS To convert to linear measure, multiply length in radians by radius of sphere	I	41° 48′ 37.12″ 0.729728	20° 54′ 18.56″ 0.364864	13° 56′ 12.4″ 0.243243	10° 27′ 9.3″ 0.182432	8° 21′ 43.4″ 0.145946	6° 58′ 6.2″ 0.121621
	II	37° 22′ 38.5″ 0.652358	20° 15′ 8.4″ 0.353470	13° 44′ 11.4″ 0.239747	10° 22′ 1.4″ 0.180939	8° 19′ 4.8″ 0.145176	6° 56′ 34.2″ 0.121175
	III		19° 56′ 1″ 0.347908	13° 37′ 59.2″ 0.237943	10° 19′ 17.8″ 0.180146	8° 17′ 39.4″ 0.144762	6° 55′ 43.9″ 0.120932
	IV		17° 7′ 30.1″ 0.298883	12° 39′ 33.5″ 0.220947	9° 53′ 7″ 0.172531	8° 3′ 51.7″ 0.140750	6° 47′ 37.2″ 0.118572
	V			12° 51′ 22.8″ 0.224385	9° 58′ 0.5″ 0.173954	8° 6′ 17.4″ 0.141456	6° 48′ 59.6″ 0.118971
	VI			10° 58′ 53.6″ 0.191664	9° 3′ 23.8″ 0.158068	7° 36′ 18.5″ 0.132735	6° 30′ 57″ 0.113723
	VII				9° 27′ 51.9″ 0.165185	7° 49′ 23.5″ 0.136540	6° 38′ 40.3″ 0.115969
	VIII				8° 4′ 6.3″ 0.140820	7° 0′ 58″ 0.122454	6° 8′ 36.5″ 0.107224
	IX					7° 28′ 57.6″ 0.130597	6° 25′ 41.4″ 0.112193
	X					6° 22′ 25.5″ 0.111243	5° 42′ 54.6″ 0.099748
	XI						6° 11′ 11″ 0.107973
	XII						5° 15′ 59″ 0.091916

More architects are learning that you can

ELIMINATE NEEDLESS COSTS and IMPROVE EQUIPMENT QUALITY



In 1958, the farsighted, *value-minded* school boards are walking off with the *real* "bargains" in classroom heating and ventilating comfort. To learn more about how you can get the most advanced hot water system *within your present budget* read below:

ECONOMY

Compared with the installed cost of some other systems, the Nesbitt Series Hot Water Wind-o-line system saves as much as 20% on construction, equipment and installation costs. Each classroom has its own Nesbitt Syncretizer for heating, ventilating and natural air cooling. And Nesbitt Wind-o-line fin-tube radiation extends along the sill to protect students sitting near windows against cold walls and window downdraft. Each student enjoys the full measure of thermal environment most conducive to optimum learning . . . whether he sits near the window or at the other side of the room.

PERFORMANCE

No other unit ventilator provides *controlled* heating, ventilating and natural cooling as effectively as the Nesbitt Syncretizer. Add to this the advantages of Wind-o-line radiation and you have two-way Nesbitt protection against (1) excessive radiant loss of body heat and (2) chilling downdraft.

This unique *double* protection is your assurance of healthful, productive comfort—free of physical distraction—for every child in the room, wherever his seat is located. *Only the comfortable student can maintain maximum learning efficiency.*

QUALITY and VERSATILE DESIGN

The copper tubing of the Nesbitt Wind-o-line radiation does double duty by serving as the supply and return mains for the Nesbitt Syncretizer in each classroom. And that means *double* savings for you on pipes and coverings, and the elimination of expensive pipe trenches, mains and runouts. Because less hot water circulates, smaller and less costly pipes and pumps are needed. Piping within the Syncretizer units is factory-assembled, labor on the job is reduced. Gravity heating maintains overnight temperature, saving money on controls. Sum total of these economies: the best in *controlled* heating and

THESE SCHOOLS CUT COSTS...and *improved quality*

In New York **$1.57 sq. ft.**

Myron Avenue Elementary School, Tonawanda, N.Y.
Architect: Fenno, Reynolds & McNeil, Tonawanda, N.Y.
Engineer: Jacobus & Babinski, Buffalo, N.Y.
Gross Area: 15,100 sq. ft.
Total Contract: $256,119.00
Heating & Ventilating: $23,681.00
Nesbitt Series Hot Water Wind-o-line System with Wind-o-line Radiation concealed by storage cabinets as shown at left

In Colorado **$1.48 sq. ft.**

Machebeuf High School, Denver, Colorado
Architect: John Connell, Deceased
R. James Noone, Denver, Colorado
Engineer: Marwi S. Wilson, Denver, Colorado
Capacity: 550 pupils
Gross Area: 48,390 sq. ft.
Total Contract: $523,200.00
Heating & Ventilating: $71,833.00
Nesbitt Series Hot Water Wind-o-line Radiation

In Maryland **$1.57 sq. ft.**

Stephen Knolls Elementary School, Montgomery Co., Maryland
Architect: Bailey & Patton, Rockville, Maryland
Engineer: Redmile, Corab & Wood, Washington, D.C.
Capacity: 450 pupils
Gross Area: 28,037 sq. ft.
Total Contract: $394,686.00
Heating Contract: $44,025.00
Nesbitt Series Hot Water Wind-o-line System eliminated pipe trenches—put all piping above floor for maintenance accessibility

ventilation for your school at a cost that's way down . . . with quality that's way up for every classroom.

SCHOOLS IN MODERATE CLIMATES

In parts of the country where daytime winter temperatures rarely fall below 20°F., Wind-o-line Radiation may not be necessary because outside window walls do not create special comfort problems. In such areas, Nesbitt offers the Mainline System. It offers the economies of the series piping arrangement without sacrificing quality.

Send for the big book, packed full of information on the value of *controlled* classroom ventilation, ***More Learning per School Dollar.***

Nesbitt

THERMAL COMFORT ALL WAYS

more learning per school dollar

Made and sold by John J. Nesbitt, Inc., Philadelphia 36, Pa.
Sold also by American Blower Corporation and by American Standard Products (Canada) Ltd.

Technical Roundup

continued from page 240

Upside-Down Air Conditioning For Chicago Newspaper Offices

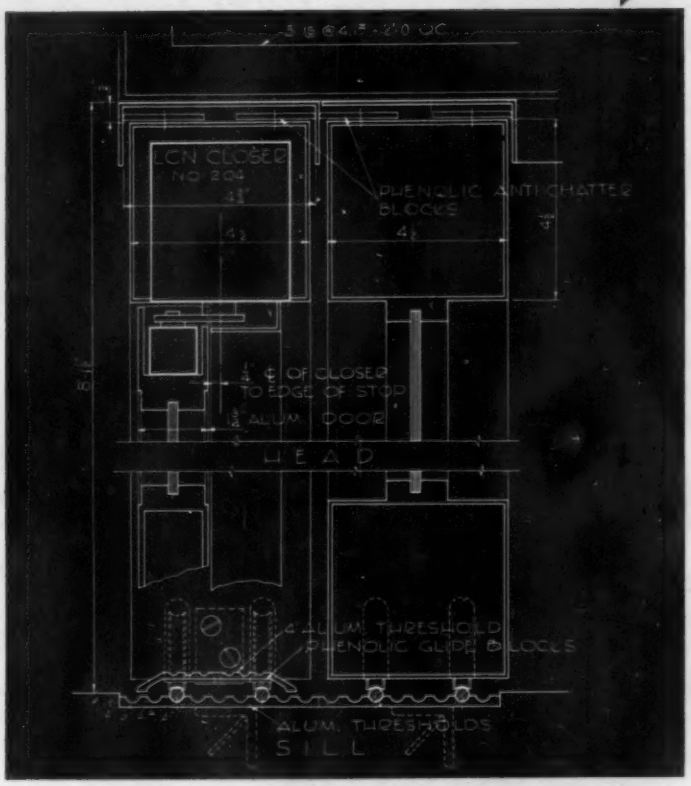
Because of the desirability of bringing newsprint paper into the new Chicago Sun-Times Building (right) at the level of the adjacent river and railroad tracks, the basement—which would normally house mechanical equipment—is given over to paper storage and the reel room, and the air conditioning system is located topside in a penthouse which houses two combination gas and oil-fired boilers, two centrifugal refrigeration compressors, and the fan equipment.

The air conditioning system designed by Chicago architect-engineers Naess and Murphy supplies tempered fresh air to interior spaces the year round, with a supplementary high velocity induction system handling perimeter heating and cooling. In this system, centrally conditioned primary air and recirculated room air are discharged through induction units beneath the windows. The balance of the space within the area served by the perimeter system is conditioned by the air distributed from ceiling diffusers. All air comes from five large systems on the eighth floor where it is filtered, cooled or

continued on page 254

Photos courtesy of Chicago Blower Corporation

Remote-controlled fans (above) provide air movement to remove ink mist from basement press room. Ink is captured by continuous blanket filter (below)



CONSTRUCTION DETAILS

for LCN Overhead Concealed Door Closer Installation Shown on Opposite Page

Each pair of doors is self-contained in a rigid frame. One pair slides to the right, one to the left, of the opening. The fixed glass panel, in its own frame, slides to the left on its own track into pocket back of the left pair of doors. The LCN 200 Series Closers are inside the head frames, arms folding into stop, out of sight. An ideal closer for this requirement.

LCN CLOSERS, INC., PRINCETON, ILLINOIS

Canada: Lift Lock Hardware Industries, Ltd., Peterborough, Ontario

Lankton-Ziegele-Terry and Associates
Architects and Engineers for the Air Curtain Entrance
Dean M. DuBoff, *Architect*

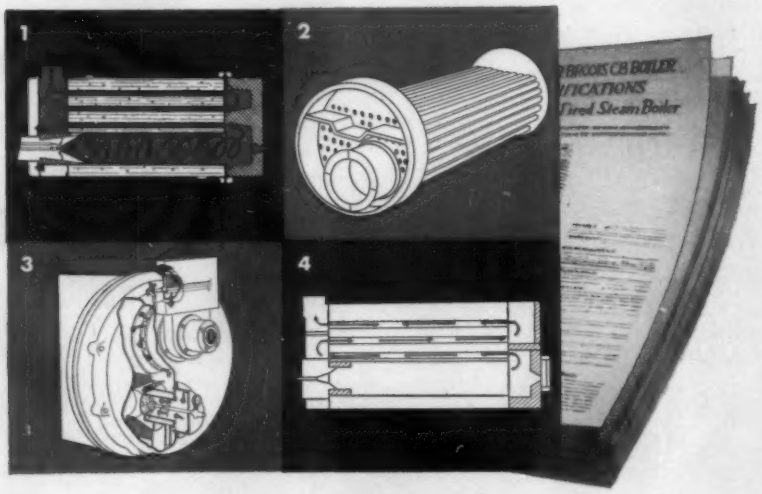
MODERN DOOR CONTROL BY *LCN* · Closers Concealed in Head Frame

BERGNER'S DEPARTMENT STORE IN SHERIDAN VILLAGE, PEORIA, ILLINOIS

LCN CLOSERS, INC., PRINCETON, ILLINOIS

Construction Details on Opposite Page

Before you specify any boiler consider how Cleaver-Brooks standards of quality . . .



Assure performance that satisfies clients

1 **Four-pass,** fire tube construction. Longer gas travel scrubs more heat from flame, assures high heat transfer and lower fuel costs.

2 **Five square feet** of heating surface per boiler horsepower makes possible many years of uniformly high operating efficiency, low maintenance.

3 **Forced draft,** controlled combustion maintains proper fuel-air ratios, highest efficiency regardless of wind or weather... requires less maintenance than other air-control methods.

4 **Updraft construction,** low furnace location places hot combustion gases low in boiler for greater safety.

These design standards are the basis for peak operating efficiency and greater safety. What's more, Cleaver-Brooks boilers save installation time and money. These fully packaged boilers arrive fully assembled, ready to install. Each boiler is fully fire-tested at the factory under load, tuned to peak economy. Starting service and on-the-job operator training by authorized field engineers further decrease overall costs, promote customer satisfaction.

Consider all the advantages; you'll see why it pays to specify a Cleaver-Brooks. Choose from 19 sizes, 130 models, 15 to 600 hp, oil, gas and combination oil/gas fired, steam or hot water.

See your Cleaver-Brooks agent for additional information, or write Cleaver-Brooks Company, Dept. D, 362 E. Keefe Ave., Milwaukee 12, Wisconsin.

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City ..... State .....

Cleaver Brooks®

Technical Roundup

continued from page 252

warmed, humidified or dehumidified, and circulated by large centrifugal fans with hollow-sectioned, aerodynamically-shaped airfoil blades.

Air supplied to both the perimeter and interior systems returns to the fan rooms to be exhausted or recirculated. As the temperature rises in the return air ducts, controls vary the temperature of the supply air to the interior spaces to hold an average space temperature.

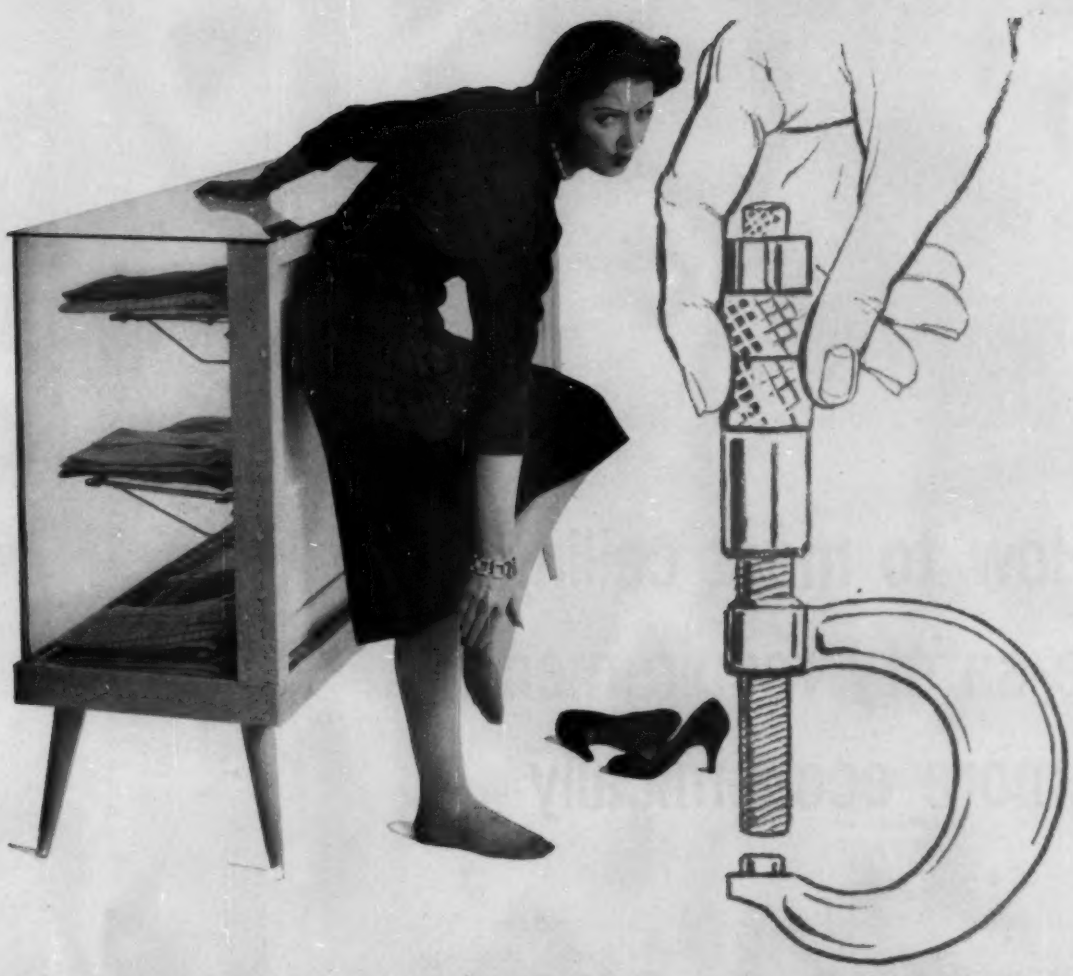
Condensing water for the system is obtained from the Chicago River, thus eliminating the need for a cooling tower. It enters the building at a temperature of approximately 75 degrees F (summer) through a rotating screen that keeps fish and debris out of the pipes and pumps, and is returned to the river at a temperature of about 90 degrees F. River water is also used in the newspaper plant as a coolant for the plate casters and the plate shavers.

Air supplied to the press room and paper storage areas is exhausted through special filters which capture the ink mist thrown off by the high speed rotary presses as they operate. To assure a continuing supply of clean filters, the absorbent paper blanket is installed in rolls which automatically re-position as the ink builds up on the filter surface.

New Wrought Iron Offers Increased Corrosion Resistance

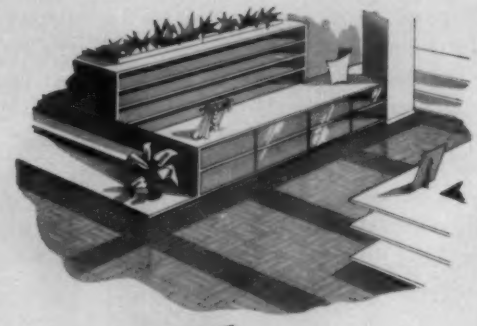
Seventeen years of in-service and laboratory tests have resulted in the development of a new wrought iron which, according to A. M. Byers Company metallurgists, has greatly superior resistance to many kinds of corrosive forces—including those caused by severe industrial atmospheres, acid solutions, salt water and steam condensates. Called *4-D* wrought iron, the improved metal is produced by increasing the deoxidization and phosphorus content of the base metal, and using a more siliceous slag. In addition to increased corrosion resistance, it is said to have greater uniformity and improved physical and mechanical properties.

more roundup on page 258



this fraction of an inch reduces depreciation in feet

The distance between a salesgirl's smile and frown is often a matter of feet. That's why so many architects know it's good business to specify Sofstep Rubber or Wearever All-Vinyl Tile when long-standing comfort is important. Extra resilience in these exceptional floorings helps reduce depreciation of feet. Isn't this combination of beauty, easy maintenance and durability, with the utmost in comfort and quiet, just what you need for projects now on your boards?



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Please send me complete specifications and full details on Sofstep Rubber and Wearever All-Vinyl Tile.

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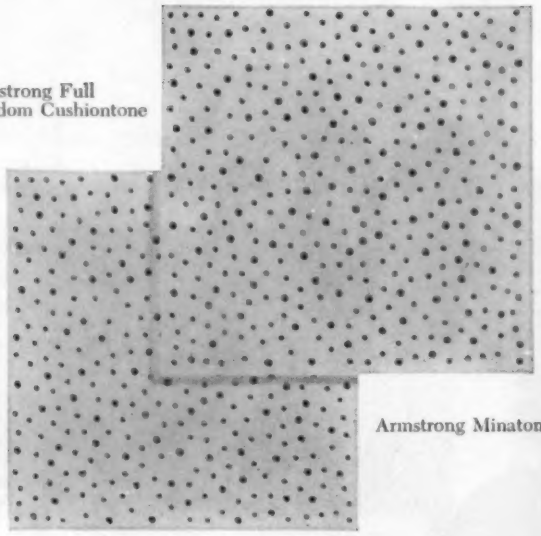


Armstrong Full Random Cushiontone

Armstrong Minatone

How to meet ceiling fire-safety requirements more economically

Substantial savings can be made by using two Armstrong acoustical materials with the same design to treat different areas of the same building. Armstrong Minatone and Armstrong Full Random Cushiontone look exactly alike—both have the same attractive full random design.

Mineral-fiber Minatone (Class A under Federal Specifications SS-A-118b) can be installed where an incombustible material is required. Low-cost, wood-fiber Cushiontone can be used where fire-safety requirements are less rigid. Therefore, you can specify uniform ceiling appearance throughout a building without having to spend extra money where incombustibility is not required.

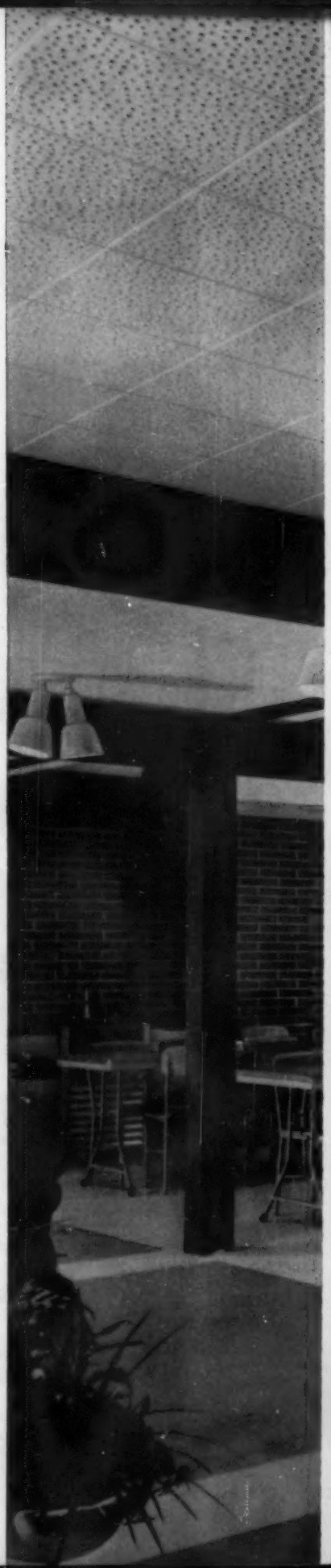
For additional information and samples, call your Armstrong Acoustical Contractor (consult the Yellow Pages), call your nearest Armstrong District Office, or write directly to the Armstrong Cork Company, 4204 Rock Street, Lancaster, Pennsylvania.

Armstrong

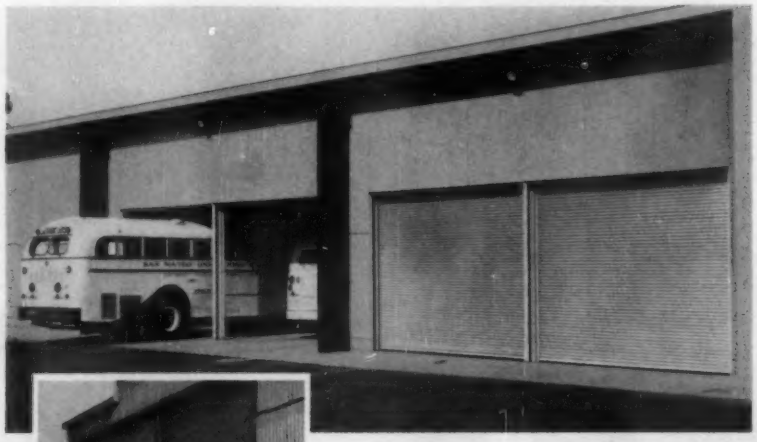
ACOUSTICAL CEILINGS

Travertone Crestone Custom Minaboard Cushiontone
Minatone Arrestone Corkoustic

Moore Institute of Arts & Sciences, Philadelphia. Acoustical Contractor: Berger Acoustical Company ▶



Easier to Specify, Install, Operate and Maintain



—whether for standard or special conditions

COOKSON

STEEL ROLLING DOORS

Cookson Doors meet the most rigid specifications for every type of heavy building construction. They provide the greatest possible protection against damage of every kind. Their easier installation, operation and lower maintenance are a matter of record. They can't stick, swell, bind, split or crack. And where weather is a critical problem, Cookson offers such optional features as guide-channel weather stripping, weather-proof "flat-slat" construction, and all-weather rubber astragal or floor-strip. Every Cookson Door is custom built to the job, fully guaranteed, and complete specifications are filed in Cookson's *Permanent Door Registry*. For full details, request Bulletin No. 701.

You get all this with **COOKSON**

- Widest variety of long-proven design features to meet every standard and special problem.
- Greatest protection against weather, breaking in, fire, general damage.
- Installed cost competitive to sliding or sectional doors, with all the advantages of rolling door design.
- Choice of four operating methods: motor, chain, crank or manual.

COOKSON

SEE SWEET'S

THE COOKSON COMPANY

1529 Cortland Ave., San Francisco, Calif.

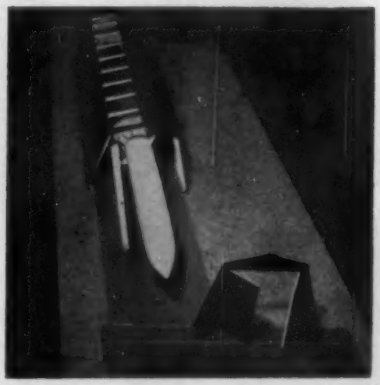
"Alumilited" Counter Doors
Rolling Service Doors, "Servire" Fire Doors, and Grilles
Side Coiling Wood Partitions · Specialty Doors

COUNT ON **COOKSON** DOORS . . . *"The Best Way to Close an Opening"*

Technical Roundup

West German Slewing Crane To Speed Erection of New York Hotel

The first of West Germany's famed slewing cranes recently made its American debut in Binghamton, N. Y., where it began work on the erection of a new luxury hotel. According to the U. S. agent for the crane, Universal Manufacturing Company, the unit is expected to save 30 to 40 per cent of material placement costs, and to make it possible to complete the project far ahead of schedule. A gantry type, traveling tower crane which stands 320 ft high, it lifts, lowers, slews, travels and luffs simultaneously—and can reach completely across the top of the construction to handle materials on the far side. At the hotel job site, the crane will be used to lift and place all materials, moving back and forth on a 210 ft section of track.



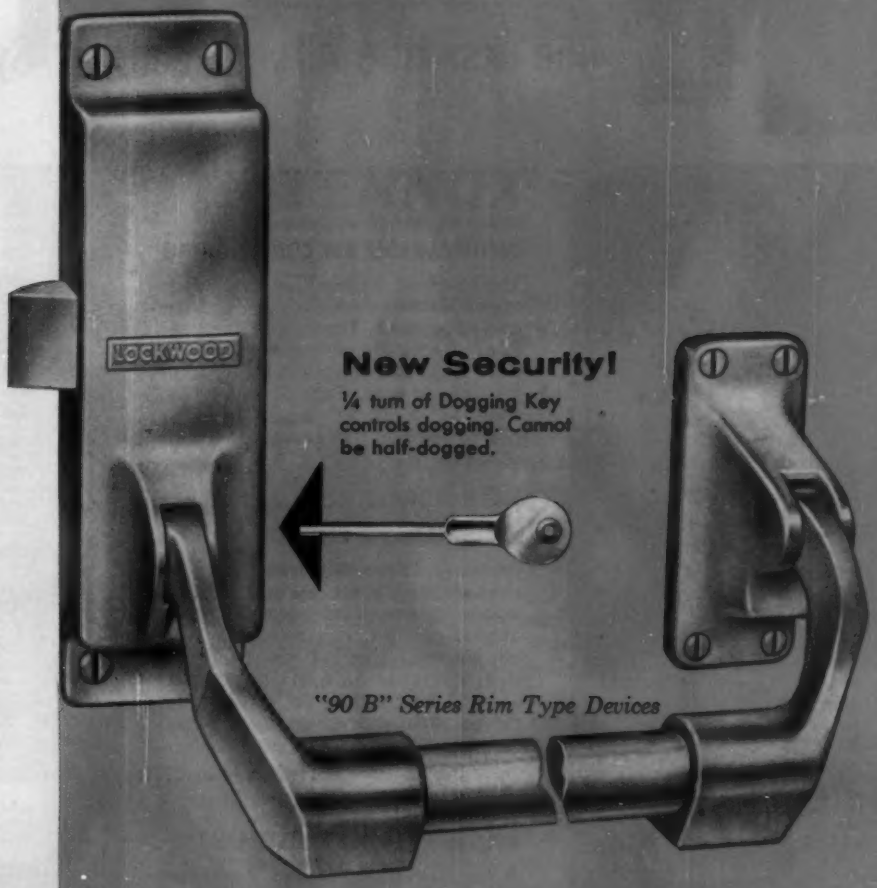
Portable Hangar For USAF Thor

To shelter the Air Force's Thor missile from heat or cold or other extreme environmental conditions, a demountable hangar has been designed which can be broken down into components and flown to the desired location. When assembled, the structure will withstand winds of up to 120 miles per hour. The shelter covers both the launching pad and the missile, which remains horizontal to permit ease of maintenance. The front sliding doors are operated manually. However, the main shelter moves back from over the missile by remote control (model photo above), permitting the missile to be erected in firing position on the pad. Developed from a design by the architectural staff at Southwest Research Institute headquarters in San Antonio, Texas, the prototype shelter is currently being built by the Douglas Aircraft Company's Missile Engineering Division at Santa Monica, Calif.

more roundup on page 262

FIRST JAMB-PROOF devices with FULL SECURITY

New Safety!
LOCKWOOD
LOCK 'N ROLL LATCH
actually "floats" with any light touch on crossbar



"90 B" Series Rim Type Devices

Safe exit . . . full security assured by

LOCKWOOD

Lockwood offers complete, new line of Rim, Mortise, Vertical and Concealed Devices, featuring . . .

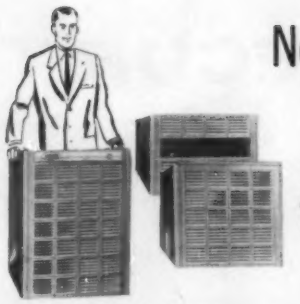
- Over 20 different functions
- Neat, smooth case design: uniform dimensions and design
- Drop-forged arms for extra strength
- Crossbar adjusts to variations in door width — no rivets, no drilling
- New, streamlined outside trim
- Simplified installation
- Roller strikes, hold-back features available

While door is closed, projection of the new LOCK 'N ROLL LATCH is rigidly retained when crossbar is in its normal, fully raised position. Any light touch on crossbar immediately withdraws all support and the multi-pivoted latch rolls freely into the case.

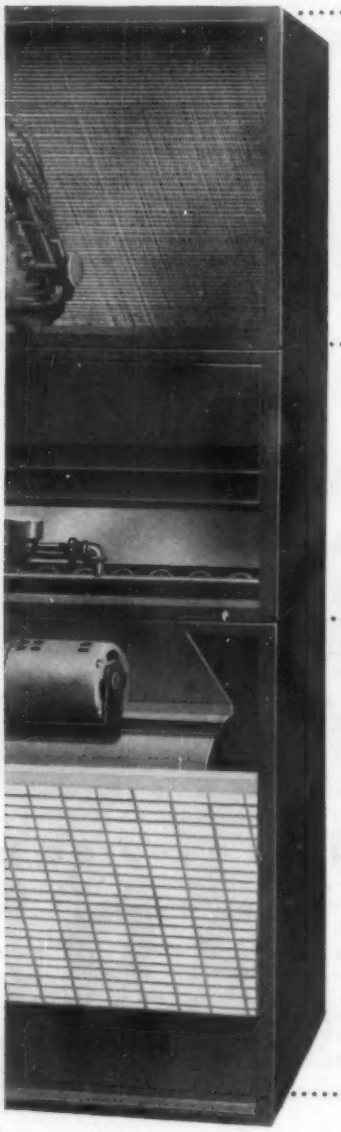
From outside, when door is closed, the latch is deadlocked and inaccessible to end pressure.

Write for brochure illustrating in detail the many exclusive features of Lockwood panic devices.

LOCKWOOD HARDWARE MFG. CO., Fitchburg, Mass.



Now . . . from Lennox research . . . a new idea: "Blocks of Comfort" that combine to form the first true All-year Comfort System . . . . . .



In any climate, in any season . . .

INCOMPARABLE AIR CONDITIONING

The cleanest, freshest indoor air ever known, cooled throughout each living or working area. The cooling unit features Ripple Fin aluminum coils for extra strength, unique angle design for free air flow. Cabinet: 26" or 34" wide, 24" high, 28" deep. Capacity: two to ten tons; in combinations, to 60 tons.

INCOMPARABLE HEATING

Exclusive "accordion-type" heat exchanger of lifetime aluminized steel wrings maximum heat out of fuel for utmost comfort, economy. Use gas, oil, electricity; or the new Landmark Heat Pump, which heats (and cools) electrically. Cabinet: 26" or 34" wide, 19" or 28" high, 28" deep. Capacity: 68,000 to 378,000 Btuh (input).

INCOMPARABLE AIR HANDLING

A big, two-speed blower, cushioned on live rubber in a roomy, sound-conditioned cabinet, "floats" large volumes of air through the Landmark—in a straight line and unimpeded by obsolete dampers, so it's extra quiet. Vibration is virtually eliminated. Draft-free comfort is assured. And the oversize, efficient Lennox Hammock Filter cleans air more efficiently (up to four times cleaner) than any other filter known. Cabinet: 26" or 34" wide, 28" or 35" high, 28" or 42" deep.

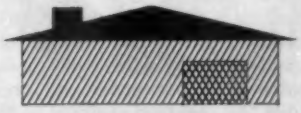
Your Lennox Comfort Craftsman is ready with more than 140 Lennox products to fill your needs!

This dependable man, who has been trained in a Lennox factory by Lennox engineers, is the one man in your community who's prepared to handle all your requirements—from plans to installation. He's ready now with complete information about Lennox products. Find his name in the Yellow Pages.

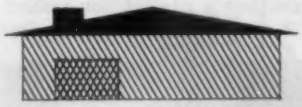
LANDMARK*

by LENNOX the LEADER

NOW... WITH THE LANDMARK... NO MORE COMFORT COMPROMISE

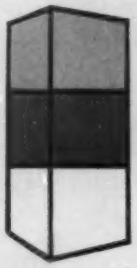


COOLING ADEQUATE, HEATING UNBALANCED, as the abundant air circulation required for cooling becomes excessive in heating months. (Compromise on winter comfort.)



HEATING ADEQUATE, COOLING UNBALANCED—with an ordinary system that can't handle high daytime temperatures, heavy sun exposure. (Compromise on summer comfort.)

HEATING JUST RIGHT, COOLING JUST RIGHT—with a Landmark, made-to-measure for your heating needs, your cooling needs, however special they may be. (No comfort compromise. Delightfully comfortable indoor air, cleaned and freshened as never before, the whole year 'round.)



Separate comfort components—for cooling, heating, air handling—precisely fitted to the climate and specific comfort needs of any home, shop, store or office! The ultimate in quality: super-quiet, super-efficient, low in operating cost!

Now, for the first time, you can specify heating and cooling to meet your needs *exactly!* For here is not the usual pre-packaged furnace with cooling added. Instead, the Landmark consists of *separate* comfort components—*blocks of comfort!*

Why separate? That's so you can select, with the help of your Lennox Comfort Craftsman, the *one* right heating unit, cooling unit, air handling unit for your needs. Combined, they form the Landmark—the *only* system that provides heating and air conditioning *made-to-measure* for any climate and comfort requirement—the finest comfort system you can choose.

Overcomes all problems

The new Landmark idea, more than four years in development, makes entirely new applications of time-tested Lennox heating and air conditioning principles. Separate units function as one—effortlessly—with efficiency no other system can match. There's no "comfort compromise" with Landmark—no "adequate heating but unbalanced cooling," no "adequate cooling but unbalanced heating." Both cooling and heating are perfectly balanced, for perfect comfort all year long.

Superb quiet is now a reality. There are no sudden "ticks" or thumps, no vibrations, no annoying air surges. Fuel bills are lower, for air travels in "slow motion" to pick up all the cooling it can hold—or all the heat in winter—as it passes through the Landmark. Installation time is reduced by as much as three hours. (More details on the opposite page.)

Whatever your comfort requirement, for home, shop, store or office, find out how ideally the new Landmark can fill your need. See your local Lennox Comfort Craftsman, Sweet's, or write Lennox, Dept. AR-84, Marshalltown, Iowa.

*Trade Mark

LENNOX comfort craftsman

more families buy LENNOX

SEE OUR CATALOG IN SWEET'S ARCHITECTURAL FILE File No. 30k/La

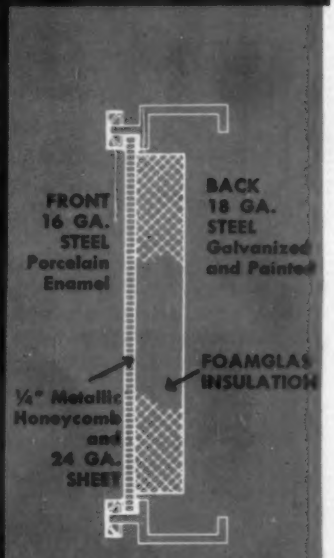
© 1958, Lennox Industries Inc., founded 1895; Marshalltown and Des Moines, Ia.; Syracuse, N. Y.; Columbus, O.; Decatur, Ga.; Ft. Worth; Los Angeles; Salt Lake City. In Canada: Toronto, Montreal, Calgary, Vancouver, Winnipeg.

Why this building created a

NEW STANDARD

of Porcelain Enamel panel

FLATNESS



90,000 square feet of porcelain enamel makes the Ford Central Staff Office Building in Dearborn a big project, but it is more than that. Here for the first time the Ing-Rich-developed "Ford Panel" was used. This design, now widely used and accepted as the ultimate in panel flatness, assured Ford a surface which varied not over 1/16" in any direction over 15 square feet. *Let us send more details.*

Architect: Skidmore, Owings & Merrill, New York — *General Builder:* Bryant and Detwiler, Detroit

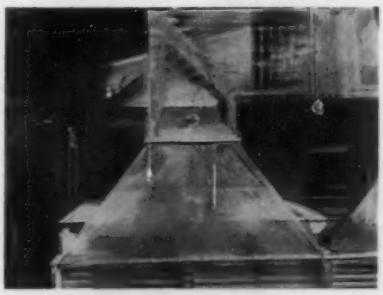
Get this New Guide to Panel Design

Ingram-Richardson
Manufacturing Company
BEAVER FALLS, 21, PENNA.
Member, Architectural Division, Porcelain Enamel Institute

Technical Roundup

Concentric Squares of Stainless Steel Sheathe New Office Building

One of the more successful "prewrinkling" jobs to date has been used for the stainless steel skin of a new office building for the Allegheny Ludlum Steel Corporation near Leechburg, Pa. The four by four feet insulated panels are die-pressed in a pattern of concentric squares that adds the required rigidity to the thin (20 gage) metal sheets and provides a pleasant contrast to the brick and granite used on the ends of the building and at its entrance. To give the panels a glare-free surface, architects William Simboli & Associates specified a special non-reflective finish for the type 202 stainless steel.



Model Studies Promise Savings in Industrial Flue Design

According to model studies conducted by Research-Cottrell, Inc., of Bound Brook, N. J., the capacities of electrostatic precipitators can be doubled by improving the flow of industrial gases through them. Observations of gas movement through ten translucent plastic models have already shown that the elimination of unbalanced gas flow, turbulence, eddies and vortexes in the flues leading to the precipitators can increase their efficiency from 85 to 98 per cent; continuing studies with the scaled working models are expected to permit the size of the units to be reduced by a quarter. The company points out that a correctly designed flue system may make it possible for certain components to be replaced by less costly devices or eliminated entirely. The improved flue design may also reduce pressure drop in the system by from ¼ to 1 in. w.g.

"I'm telling America 100,000,000 times!"

Beauty in the bathroom begins with Eljer

Swing to Eljer fixtures for beauty in the bathrooms of the '58 homes you're planning now. You'll find they catch more eyes, win more acceptance, sell faster! Reason? A record-breaking sales promotion that has made Eljer bathrooms the dream of all America.

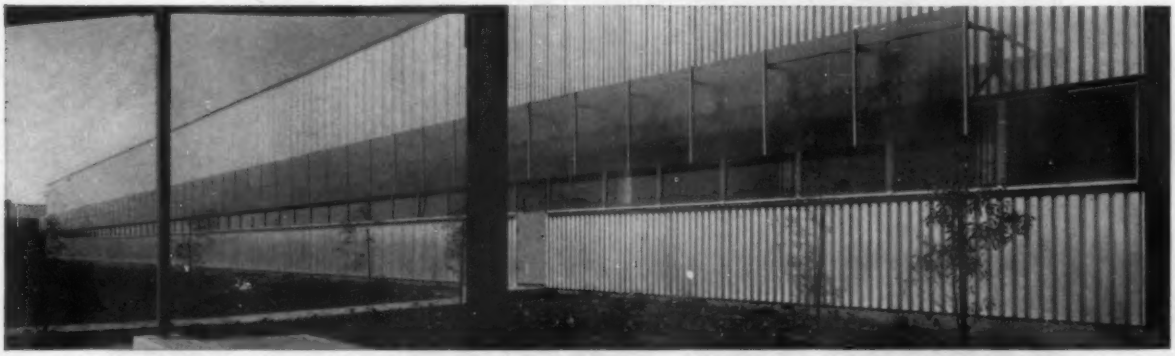
Timed to hit your markets with 100 million messages at the peak of the selling season, this Eljer drive splashes glowing colors across the pages of top Sunday magazines —*This Week* and *Parade*—and the unchallenged leaders in the shelter book field—*Better Homes & Gardens* and *The American Home*. There can only be one result—a wave of popularity that makes Eljer bathrooms a powerful stimulus to sales of the homes you design.

Make this $1,000,000 sales effort work for you. Ask your Eljer representative for a firsthand look at the complete line of fixtures, the range of decorator-tested colors, the prices to suit every style of home. Or write Eljer Co., 3 Gateway Center, Pittsburgh 22, Pa.

ELJER

Division of The Murray Corporation of America

LIGHT DIFFUSING GLASS MAKES...

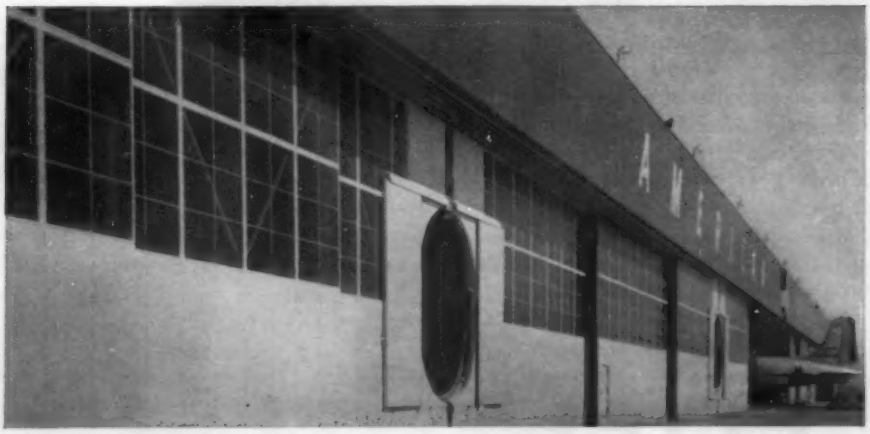


Architects: Marcel Breuer and Associates
Supervision: Craig Ellwood

A point of special architectural interest in the new Torrington Manufacturing Co. plant at Van Nuys, California is the sunshade of Coolite heat absorbing wire glass that spans the western elevation.

Complementing the spectacular new IBM offices in San Jose, California are these Hauserman partitions, glazed with lustrous Mississippi Broadlite glass.

Architect: John S. Bolles, San Francisco, Calif.
Partitions by: E. F. Hauserman Co., Cleveland, Ohio



1260 lights of ¼" Coolite Wire Glass provide better daylight with protection, while absorbing excess solar heat in expansive American Airlines Hangar at Los Angeles International Airport.

Architect: Quinton Engineers Ltd., Los Angeles, California
Glazing by: W. P. Fuller and Company, Los Angeles, California

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M I S S I S S I P P I

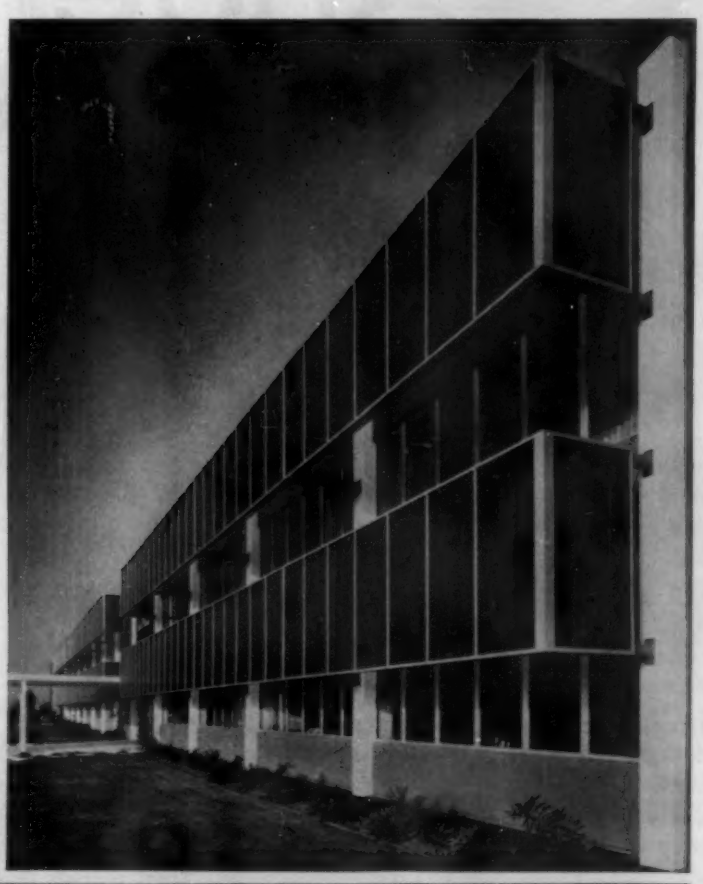
NEW YORK • CHICAGO • FULLERTON, CALIF.

WORLD'S LARGEST MANUFACTURER OF

Daylighting and *Dollars* GO FARTHER

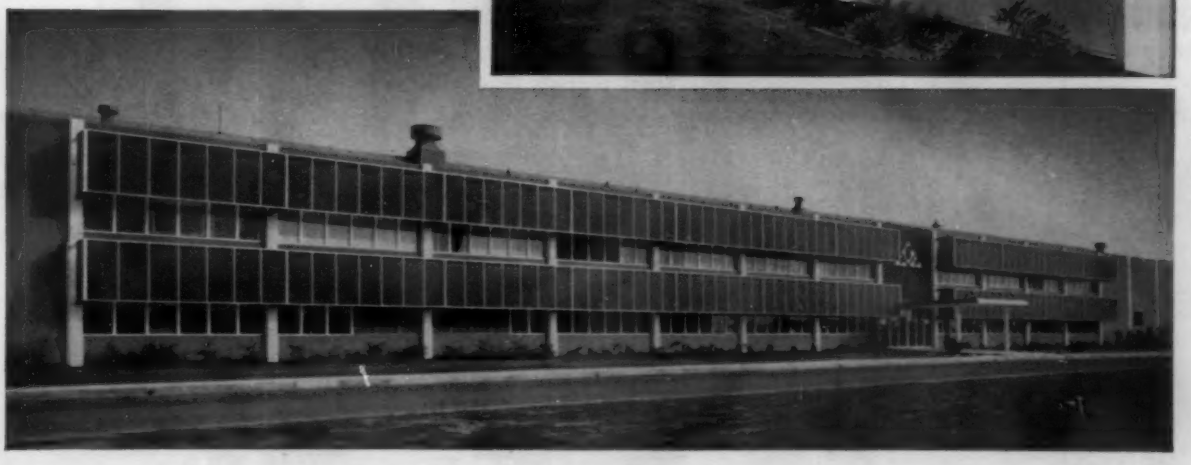
To make the most of daylight, use translucent, light diffusing glass by Mississippi. For utility, beauty and economy, unmatched by any other glazing medium, specify Mississippi Glass. Available in a wide variety of patterns, wired and unwired, at better distributors everywhere.

Write for new 1958 Catalog. Address Department 7.



A place in the sun is especially desirable when heat absorbing blue-green Coolite Glass is there to help employees see better, feel better, work more comfortably. A brand new concept in "extended screen" glazing technique that combines beauty and utility.

Growers Container Corporation, Fullerton, Calif.
Architect: Falk and Booth, San Francisco, Calif.



MISSISSIPPI GLASS COMPANY

88 Angelica St. • St. Louis 7, Mo.

ROLLED, FIGURED AND WIRED GLASS

New! The Andersen Strutwall...

TRADEMARK OF ANDERSEN CORPORATION

a modular component that joins window and wall!

Factory assembly gives tighter, trouble-free fit; saves labor; simplifies and speeds construction!

Here's a great advance in fenestration. A new building component that makes a quality window an integral part of the house frame. Offers tremendous advantages to architects everywhere.

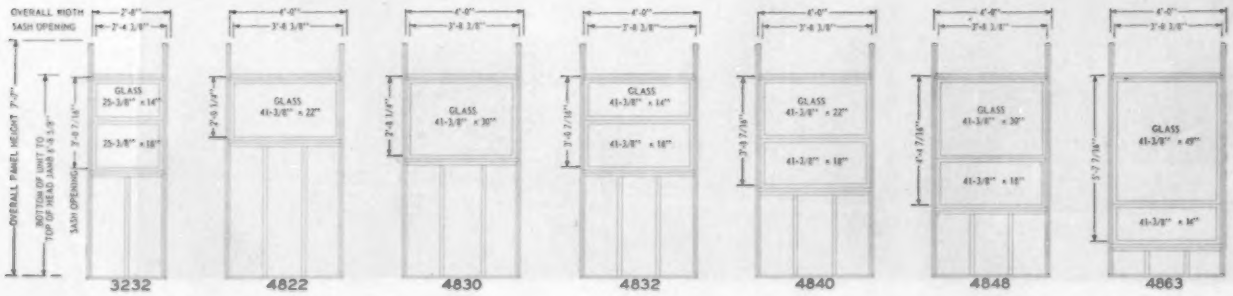
Precision factory assembly of load-bearing side struts, nailers and lower jack studs gives the new Andersen Strutwall unusual resistance to racking. Provides the tightest possible joining of window and wall. Cuts framing and installation two-thirds—from around 22 steps to 7.

To install the new Strutwall, the two load-bearing struts are cut to fit the header construction used. The component is nailed to adjacent studs, tilted up with the wall. Such simplicity practically eliminates the chance of carpentry errors—and callbacks.

There are even bigger advantages in mullions and larger openings. New Strutwalls are simply butted against each other. Because there's structural support at 4-foot intervals, nothing heavier than two 2 x 6 headers are needed in single story construction.

The new Andersen Strutwall fits any type of frame construction—including panel systems. It's been perfected and proved by field tests all over the country.

The Strutwall is sold throughout the United States and Canada. For more information or specification data, write Andersen Corporation, Bayport, Minnesota.



Available in 7 sizes, 2 styles! Andersen makes seven sizes of the new Strutwalls, two sizes of Strutwall door frames. Window components include both famous Beauty-Line* and Flexivent® styles.

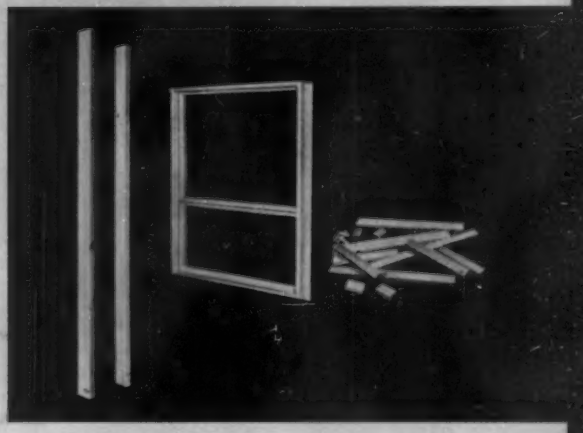
*Patent pending.

Andersen Windowalls

TRADEMARK OF ANDERSEN CORPORATION

ANDERSEN CORPORATION • BAYPORT, MINN.

Simple, error-proof construction! Just cut two load-bearing struts to fit header construction. Nail Strutwall to adjacent studs, tilt up with the wall. This cuts installation steps two-thirds. Practically eliminates chance of carpentry errors and callbacks.



Saves materials, costs less installed! New Andersen Strutwall eliminates the two long cripples on the left, requires two 2x6's instead of heavier headers in multiple openings. Builders report a good saving in total installed costs—even when figured against inferior conventional windows.

Fits tighter, looks better! Because all parts of the Strutwall are nailed and glued at the factory, you get unusual resistance to racking —the tightest possible joining of window and wall. Famous Beauty-Line and Flexivent styles add beauty and sales appeal to your homes.

ALTEC LANSING sound systems are specified for more fine commercial and public buildings, stadiums, and schools than any other sound equipment.

ALTEC has gained leadership in commercial sound installations by offering the most complete *flexibility*—over 100 sound products all made to serve a particular purpose; *reliability*—ALTEC practices the most stringent quality control to produce sound products for long, trouble-free service; *simplicity*—ALTEC sound products are famous for their straightforward, simple design to insure ease of installation and service plus purity of sound; *convenience*—there is a trained ALTEC Engineering Sound Contractor near you.

Call him for help with your next sound problem or write for free information to

ALTEC LANSING CORPORATION, Dept. 4R
1515 S. Manchester Avenue, Anaheim, Calif.
161 Sixth Avenue, New York 13, N.Y.

ALTEC

• microphones • preamplifiers • amplifiers • loudspeakers • loudspeaker systems

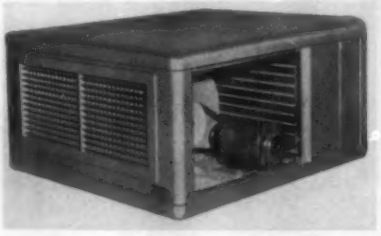
12-23

Product Reports

continued from page 268

Low Silhouette Glass Skylight

Owens-Illinois' newly designed *Toplite* panels now come in a flanged type that sits directly on the roof with no curb (detail below), giving a lower silhouette than does the curb type panel formerly the only one available. Like the conventional curb type, the new flanged panel is factory prefabricated of low-brightness, light-selecting glass units in a structural aluminum grid. Either type may be had with light-selecting prisms at 45 or 90 degrees to the perimeter for maximum flexibility in orientation. Their hollow, evacuated glass "panes" provide excellent thermal insulation, reducing heat loss in winter and virtually eliminating condensation. Both types of panels are nominally 3 in. thick. *Owens-Illinois, Toledo 1, Ohio*



Ceiling-Mounted Air Conditioner

A ceiling-mounted, horizontal type blower evaporator for commercial installations comes in an attractive cabinet that can be mounted directly in the conditioned space, or remotely mounted and connected to a duct system. Space for steam or hot water coil permits simple conversion to a year-round air conditioning and heating unit. Available in duct or grille models with capacities of 2, 3, 4, 5 and 7½ tons, the *Bohn CH* is rated at 400 cfm per ton. *Bohn Aluminum & Brass Corp., Danville, Ill.*

more products on page 274

mc Philben
LIGHTING COMPANY

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J. B. Derr Assoc., 2430 Spruce St.
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Wm. Benndorf Co., 221 E. Camelback Rd.
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Roy E. Thomas, P.O. Box 1804
READING, PENNSYLVANIA
J. B. Derr Assoc.
1600 Penn Ave., Wyomissing, Pa.
RICHMOND 19, VIRGINIA
George E. Schraudt, Jr., 202 E. Cary St.
ROCHESTER, NEW YORK
Walter E. Daw Co., 223 Linden St.
SALT LAKE CITY 1, UTAH
The Darger Co., 211 So. Second St.
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Humber & Walker Co., 314 12th St.
ST. LOUIS 17, MISSOURI
Hisserich-Koerner Assoc., 2001 Big Bend Blvd.
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Frederick E. Gleason, 657 E. 45th St.
STURGIS, MICHIGAN
Robert Zannoth Agencies, 418 W. Chicago Rd.
SYRACUSE, NEW YORK
Walter E. Daw Co., 753 James St.
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Artopeous-Smith Co., 510 Manhattan Bldg
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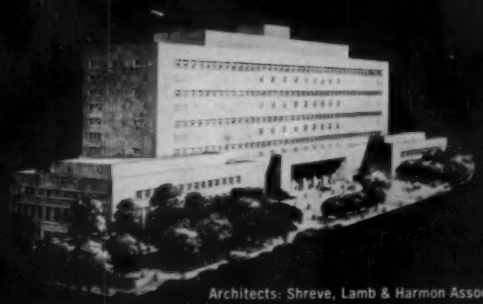
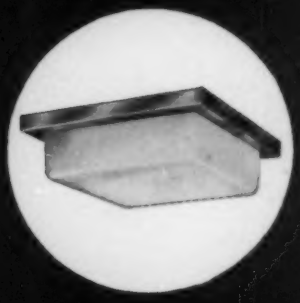
Aksel Knudstrup
P.O. Box 366, McLean, Va.
EXPORT
International Lamp Co.
30 Church St., New York 7, N. Y.

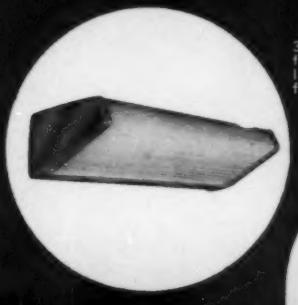
for the new Brooklyn Supreme Court Building



Architects: Shreve, Lamb & Harmon Associates
Electrical Contractor: John G. Hellman Co. Consulting Engineers: Syska & Hennessy, Inc.
N. Y. C. Commissioner of Public Works: Frederick H. Zurmuhlen



32-88 square ceiling unit for corridors . . . two 100 watt lamps.



37-65 new wall bracket for stairways and mirror lighting . . . two 15 watt fluorescents.

45E-8 directional sign for wall installation . . . one 8 watt fluorescent.

3½" shallow 43-24 recessed downlight for outside canopies, shower rooms, vestibules . . . one 150 watt lamp.

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The superb new Brooklyn Supreme Court Building features lighting by mc Philben throughout. From lobbies to boiler rooms, hallways to lavatories, auditoriums to prison cells, **special purpose** mc Philben units meet exact specifications.

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43-24 ☐ 37-65 ☐ 45E-6 ☐ 32-88 ☐

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Company

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Connecticut General Life Insurance Company Building features

glass-clad construction in color

IN DESIGNING this impressive office building of the Connecticut General Life Insurance Company in suburban Hartford, Connecticut, full use was made of Pittsburgh Glass as a basic architectural material. One of the featured glasses was SPANDRELITE® . . . beautiful *glass in color*. This building is one of the largest SPANDRELITE installations completed to date.

SPANDRELITE gives the architect new latitude in design. It is the answer to the insistent demand for a quality glass product specifically designed for the curtain-wall spandrel. In SPANDRELITE, a galaxy of colors has been added to the timeless properties of glass. Moreover, this structural material has *strength, durability, weather* and *corrosion resistance*. And it is installed and maintained just like ordinary glass.

A heat-strengthened glass, with ceramic color fused to the back, SPANDRELITE is available to architects in two finishes: *twill* and *polished*. Eighteen standard colors—and a wide range of custom colors—make SPANDRELITE adaptable to any design.

For assistance on problems of curtain-wall construction, without obligation to you, consult our Architectural Representative near you. Meanwhile, fill in and return the coupon for our free full-color book, illustrating and describing the application of SPANDRELITE to all kinds of structures.

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glass in color

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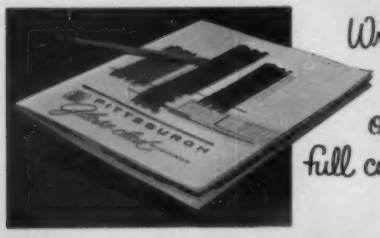
Home Office Building, Connecticut General Life Insurance Company, Hartford, Connecticut • Architects: Skidmore, Owings & Merrill, New York City • General Contractor: Turner Construction Co., New York City



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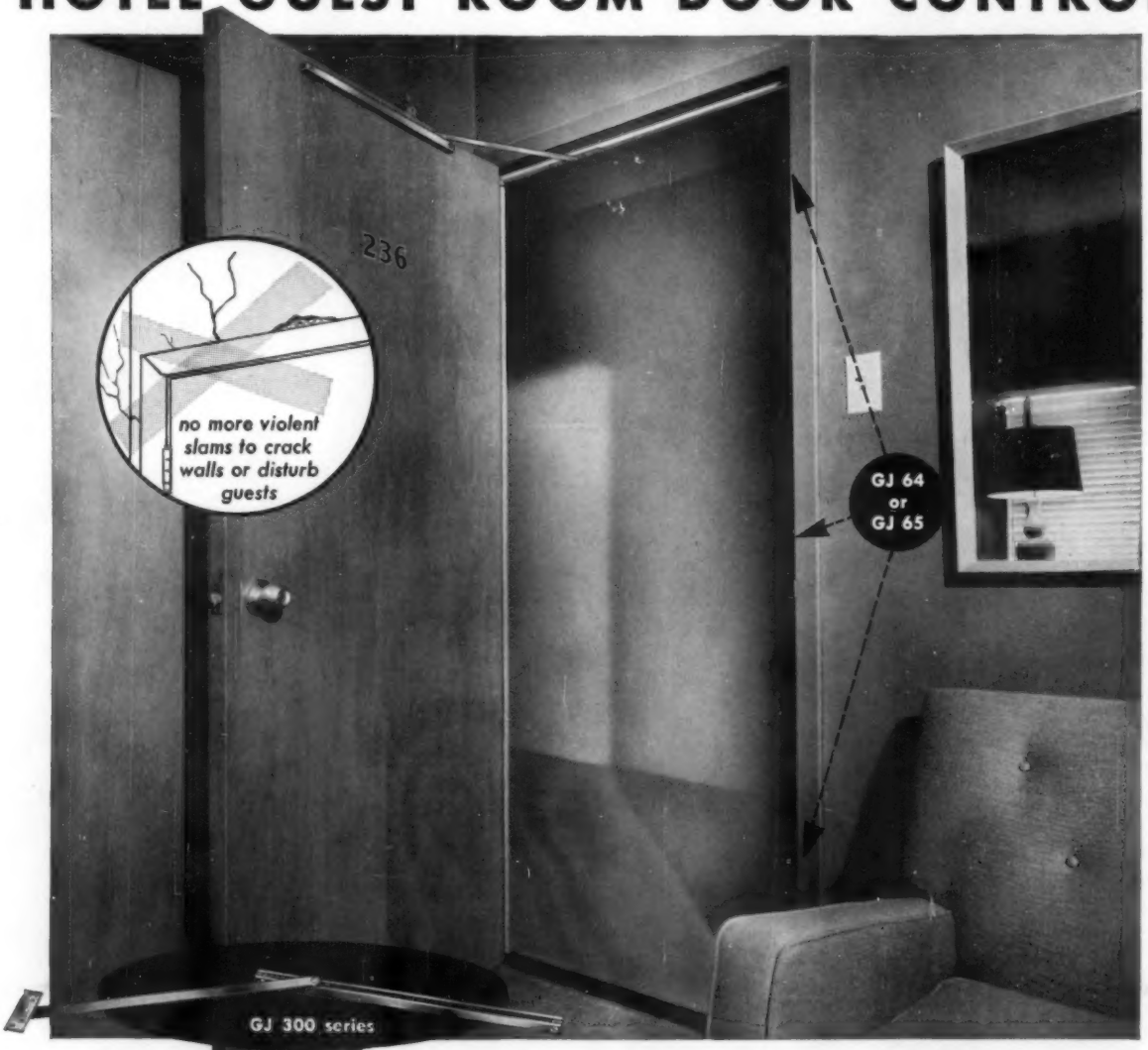
an ideal specification for quiet, slam-proof

HOTEL GUEST ROOM DOOR CONTROL



This ideal GJ specification for hotel guest room doors is used in such outstanding hotels as:

Hotel Fontainebleau, Miami Beach, Florida
Morris-Lapidus, Miami Beach — architects

Hotel Monteleone, New Orleans, Louisiana
Bernard & Bernard, New Orleans — architects

The Morris Inn, "On the campus," Notre Dame, Ind. Holabird & Root & Burgee, Chicago, Ill. — architects

All above hardware can be quickly installed on existing guest room doors.

"shall have GLYNN · JOHNSON...

GJ 300 series CONCEALED (or surface mounted) OVERHEAD DOOR STOP with FRICTION CONTROL." (Door is under constant control of friction. Eliminates guest disturbing noise of doors slamming open or shut. Opening swing of door is stopped by a shock absorbing spring cushion at any degree specified up to 110°. Door stop is mounted overhead, out of the way. Avoids interference with cleaning and the stumbling hazard of base type stops.)

"THREE GJ 64 for metal frame (or GJ 65 for wood frame) RUBBER SILENCERS." (Form pneumatic air pockets to absorb shock and noise of closing and create constant latch tension . . . no door rattling.)

write for complete information and details

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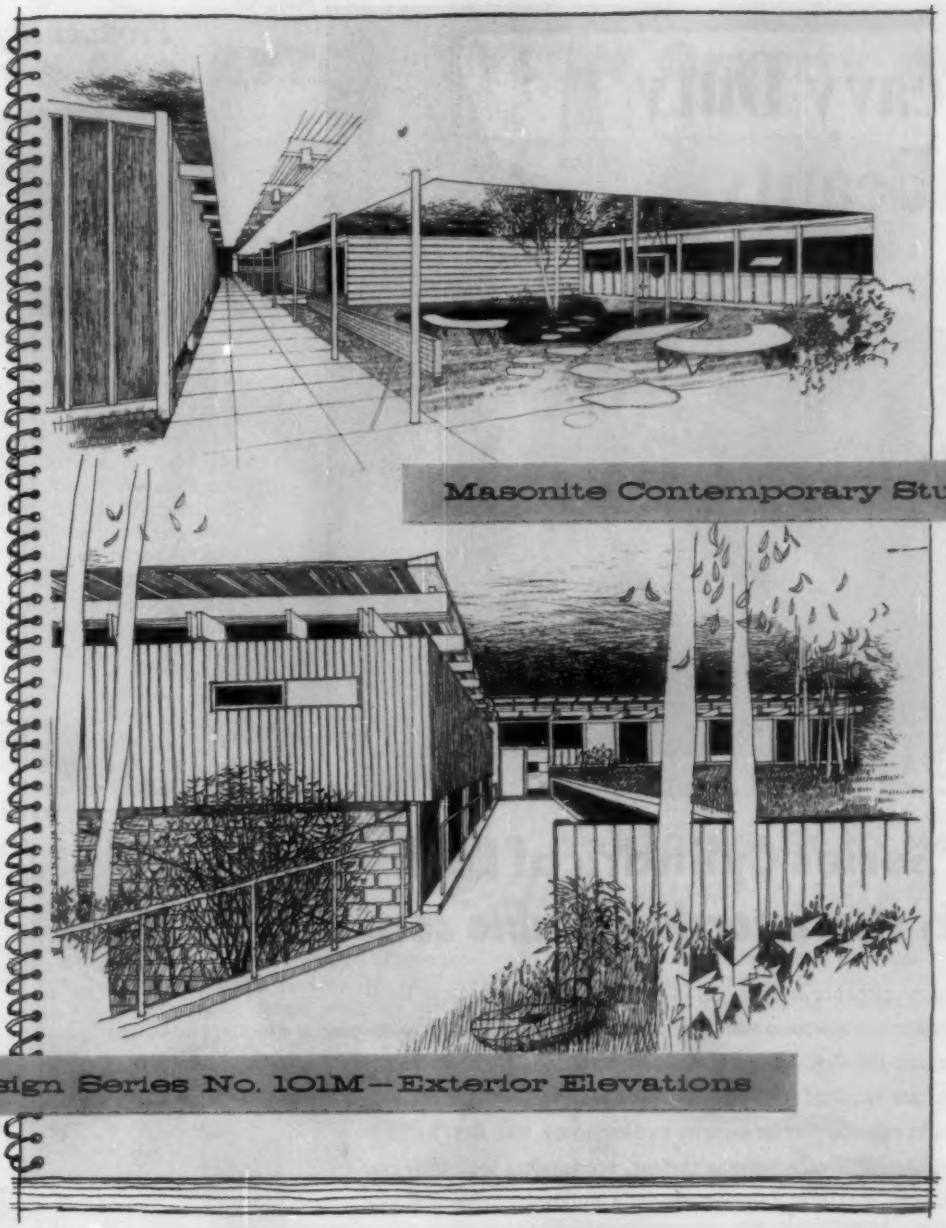

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7-K Series Cylindrical Locks with the *interchangeable core**

• Handsome elegance is apparent in a glance at this new BEST lockset. Rugged construction combines with precision pin-tumbler operation to make the 7-K Series a superior selection wherever heavy duty locks are required.

BEST locks provide greater security and economy, too. BEST's exclusive *interchangeable core* permits instant, economical lock changes, and "one-key" masterkeying throughout a building or entire group of buildings. Investigate the advantages of BEST today.

• Choice of trims and knobs • Available in all standard functions • Choice of finishes • Automatic deadlocking • 100 percent reversibility • Meets Federal Specification 161

*The *interchangeable core* is a patented, key-removable pin-tumbler mechanism which can be removed with a special "Control Key" (used only to remove and replace cores in a specific system), effecting instant change of locks.

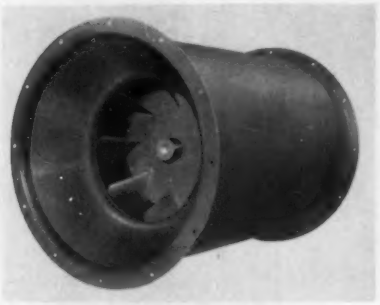
See Sweet's Architectural File $\frac{18e}{Be}$ or write

Dept. A-7

Best Universal Lock Co., Inc.

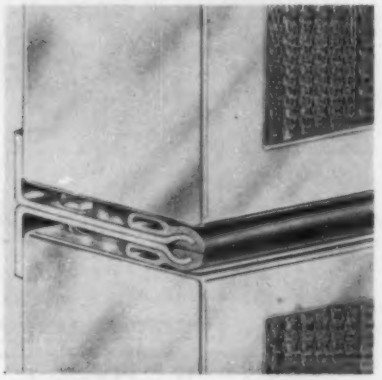
10 N. Senate Ave., Indianapolis 4, Indiana

Product Reports



Tubular Centrifugal Fan

Dryer's new *TC* fans for air-conditioning, ventilating and industrial process applications combine the compactness of tubular fans with the efficiency of scroll centrifugals. Despite their resemblance to axial fans, their performance characteristics are said to approach the ideal for backward-curved blade centrifugal fans. They also save space and eliminate the costly mounting and ductwork complications of scroll fans. Non-overloading, quiet and stable in operation, the tubular centrifugal fans are offered in twenty sizes for volumes from 500 to 100,000 cfm and static pressures up to 12 in. *Dryer Electric Corp., 164-166 Wallabout St., Brooklyn 6, N. Y.*



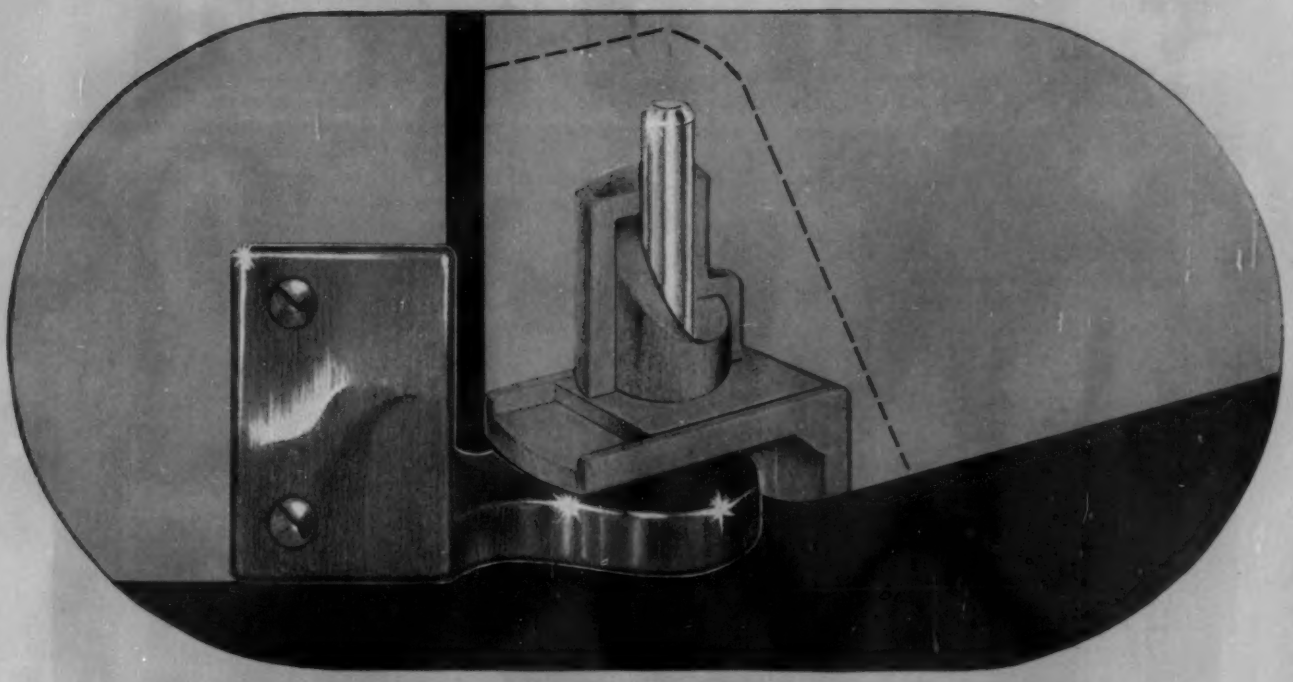
Low Cost Filter Bank Assembly

A new low cost filter bank assembly features a polyvinyl chloride gasket that is said to provide a lifelong dustproof seal between the filter and filter holding frame. Built into the front of the air inlet side, the *Seal-Tight* gasket locks the filter into the holding frame with a sealing pressure of 4.1 lb per inch, eliminating the need for clips, springs, latches or locking attachments. According to the manufacturer, it is not affected by oil or moisture, and will maintain a positive grip even after years of filter changes. *George Evans Corp., Moline, Ill.*

more products on page 278

Only FIAT TOILET COMPARTMENTS

have the *ZYTEL*** *NYLON* Gravity Hinge



unexcelled properties put to work in new, outstanding *LIFE-LINE** door hinges

Here, at last, is a hinge that can be built into a compartment door and then forgotten! Complete load bearing and cam action surface of DuPont Zytel. Tested over a million times with no visible signs of wear, this hinge is truly a marvel of modern science and engineering. There are no springs to replace—no undersized ball bearings to wear out—no periodic adjustments to make—no lubrication required. Check the amazing advantages of Zytel nylon.

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REACH the windows easily. Work in safety and comfort. Reduce time required to one-half or less.

Yes, it pays every way you look at it to have your building equipped with a Cleveland Tramrail window washing system.

Tramrail is now needed more than ever before on new modern buildings with their tremendous window walls.

For smaller installations, as illustrated, hand-operated systems are satisfactory. For larger or higher buildings, Cleveland Tramrail motorized equipment is preferable, because of the additional time savings it makes possible.

Many buildings up to 100 feet in height are equipped with Cleveland Tramrail window washing equipment. It will pay you to investigate the advantages of installing it on your building.

For Further Information
Write For Booklet No. 2022A

Time-consuming drudgery of handling ladders, climbing and carrying is eliminated with Cleveland Tramrail equipment like this. The washer can clean a long strip of windows without leaving his cage. Another advantage of the equipment is that it facilitates painting, pointing up and various repairs.

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Overhead Materials Handling Equipment

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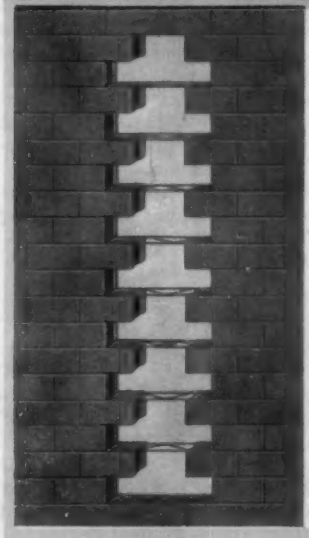
Why DUR-O-WAL®?



Dur-O-waL is custom-fabricated to lay flat and tight in the mortar-bed. Research tests demonstrate that "a wall with five courses of reinforcing is 260% stronger than non-reinforced masonry walls with Class B mortar and 245% stronger than walls constructed with Class A mortar." "Where strong mortars are used, the strength of the wall increases as the amount of steel increases." Dur-O-waL, reinforcing pioneer and recognized standard of quality, is preferred for its unexcelled performance.

**Truss type Standard Dur-O-wal has 33% more weight of high tensile steel per lineal foot.*

***Standard Dur-O-wal, Class A Mortar every other course. 16"oc.*

†Mortar Lock tests from independent research studies.

††Bond tests from independent research studies.

****Reduces shipping costs.*

- Exceeds ASTM Specifications
- 33% more lbs. of steel*
- Increases wall strength 85%**
- Mechanical Bond Strengthens Mortar Lock 46%†
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- Distributed everywhere from 8 strategically located manufacturing plants***

TRUSSED DESIGN
BUTT WELD
DEFORMED RODS

as a service to the building industry Dur-O-wal is happy to provide you with a fact file containing the findings of an independent research study on masonry wall reinforcement.

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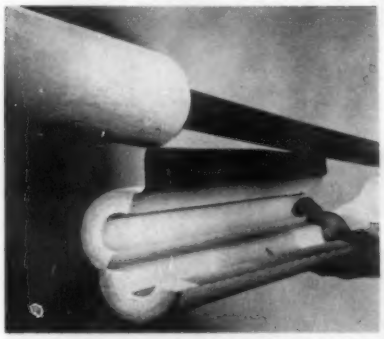

"Hinge Action" Pipe Insulation

A new glass fiber pipe insulation comes with each section cut longitudinally through one wall and almost through the other wall to provide a "hinge action" opening and closure for faster application at lower cost. Available with or without factory-applied canvas, vapor barrier, flame-retardant, waterproof or general purpose jackets, it has a temperature range from below zero to 350 degrees F., and can be used to insulate pipelines carrying hot or cold water, brine or low pressure steam. The high thermal efficiency of the new glass fiber material is said to make it superior to many commonly used pipe insulations and to permit a lesser wall thickness in certain applications. The insulation comes in one-piece formed sections three feet long, in a wide range of inner diameters and wall thicknesses. *L.O.F. Glass Fibers Co., Toledo, Ohio*

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Now you can free your organization from the detail work and costly board time necessary to plan a laundry. With no obligation, The American Laundry Machinery Co. offers architects a comprehensive laundry planning service for all types of schools and universities. Our survey engineers will provide a detailed plan integrating laundry facilities with the other important elements of your school design.

This is all we need to know: Number of beds if dormitory linen is to be handled or if plans include a medical center or infirmary, number and types of athletic uniforms, number of students enrolled in physical education classes, dining facilities, will there be a valet shop or student laundry service, whether laundry equipment will be operated by students.

We'll provide this information: Our survey engineers will prepare detailed drawings, floor plan layouts and complete specifications for the laundry. Finished plans include size and type of equipment needed, proper arrangement for smooth work flow, operating personnel required, water and steam requirements including size of piping, electrical connections, ventilation, lighting, foundation support, floor space, size of openings for admittance of equipment, approximate operating cost—every detail you will need to design an efficient space-saving laundry department. This planning service is available to architects without obligation. Call your nearby American representative, or write.

Send for your copy of American's ARCHITECT'S REFERENCE GUIDE *containing full information on our complete line of laundry equipment.*

ST. XAVIER COLLEGE, *Chicago, Ill.*
Architect: Naess and Murphy. General Contractor: E. H. Marhoefer & Co. Laundry Equipment: The American Laundry Machinery Co.

The American Laundry Machinery Company, Cincinnati 12, Ohio

You can expect more from **American**

Diazo Enlarger

A projector that can produce rapid, sharp, distortion-free microfilm enlargements on low cost diazo paper has been announced by the Keuffel & Esser Company. A prototype model which makes letter-sized enlargements from 35mm film is currently in production, with larger units scheduled for delivery later this year. The bigger models will be capable of making prints as large as 18 by 24 in. from negatives up to the 105mm size. Trade-named the *Helios Enlarger*, the new projector will operate on conventional 110-115v AC power. No darkroom is required and standard developing is used. *Keuffel & Esser Co., 260 Madison Ave., New York 16, N. Y.*

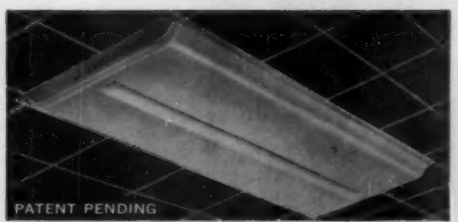
Automatic Spray Humidifier

Designed to fit all forced-air heating systems, the Lennox *Humidispray* evaporates up to 18 gallons per day; eliminates clogging by means of a continuous, self-cleaning spray. The humidifier is said to meter automatically the proper amount of humidity according to the severity of the weather: the more heat demanded of the furnace, the more moisture is evaporated. Warm air from the furnace is led through a fine water spray and moisturized air is then returned to the furnace for mixing and distribution. A filter pad traps and drains unevaporated water; also, a manual control regulates cfm of air through the humidifier for more exact metering. *Lennox Industries, Inc., Marshalltown, Iowa*

more products on page 284

SHALLORAMA®

the NATURAL choice in re-lighting



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Designed for architects, interior decorators and building owners, the custom-styled SHALLORAMA® is a *natural* when it comes to re-lighting.

Here is a fixture combining clean, contemporary styling with basic simplicity and minimum maintenance. Easy to mount over existing outlets, these surface-mounted Visionaires® are so shallow in appearance they almost look recessed.

Available in 2 and 4 lamp widths, SHALLORAMA® is extremely versatile and suited for applications in offices, stores, banks, schools...especially in low ceiling installations. Re-light with Plexiglas shielded SHALLORAMA® for long-term serviceability.

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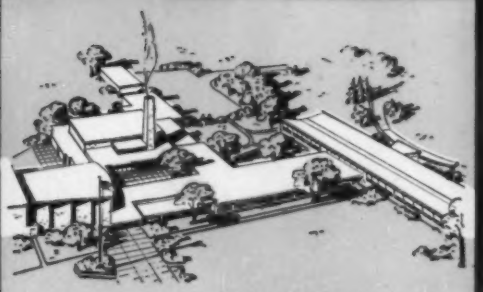
JOHN D. BENNETT, SR., A.H.C., President & Treasurer, H. H. Bennett Hardware Co., Easton, Pa.

"I combine style and utility with Stanley olive-knuckle hinges"

"Yes, I like to recommend olive-knuckle hinges because they're more than strictly utilitarian. Their use adds a style and distinguished appearance to the doors of buildings where they're used. I find that clients like these hinges, too, because they're in such good taste.

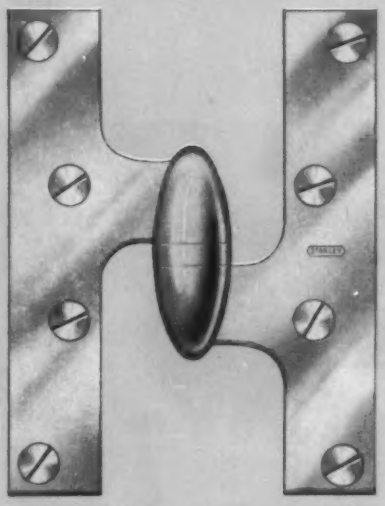
"Of course, the Stanley trademark is sound insurance that the hinges will stand up under the most rigorous usage."

Stanley olive-knuckle hinges are made for all types of doors. There is the extra-heavy, ball bearing hinge for hollow metal doors or high-frequency wood doors; the regular-weight hinge for 1⅜" and 1¾" wood doors; and the 3" hinge for cabinets and wardrobes. Send for full details. Stanley Hardware, Division of The Stanley Works, 164 Elm St., New Britain, Connecticut.

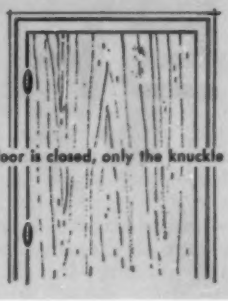


Mr. Bennett supplied Stanley olive-knuckle hinges throughout this fine, new high school in Emmaus, Pa.

Architect: Wolf & Hahn, Allentown, Pa.
Gen. Contr.: H. E. Stoudt & Son, Inc., Allentown, Pa.



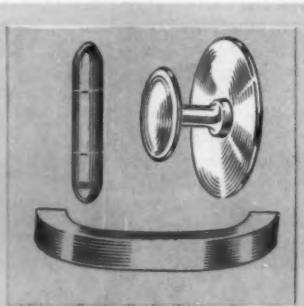
This is Stanley's BB92 olive-knuckle hinge, used to swing the interior doors of Emmaus High School.



When door is closed, only the knuckle shows.

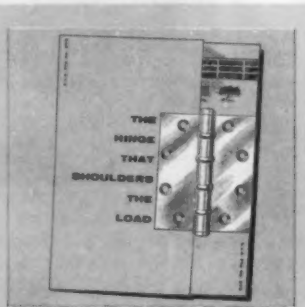
STANLEY IS THE NAME TO LOOK FOR ON QUALITY PRODUCTS LIKE THESE

Stanley continuous hinges look neater and stand up longer under the rugged treatment given to cabinets and lockers.



Solid aluminum cabinet hardware (also available in brass) is one of eight smart and practical styles made by Stanley.

Stanley's new bi-fold hardware is concealed on both sides of door and is used for both closets and passageways.



A graphic illustration of why Stanley's full-jeweled, ball bearing hinges last as long as the buildings where they're used.

AMERICA BUILDS BETTER AND LIVES BETTER WITH STANLEY

STANLEY

This famous trademark distinguishes over 20,000 quality products of The Stanley Works—hand and electric tools • builders and industrial hardware • drapery hardware • door controls • aluminum windows • stampings • springs • coatings • strip steel • steel strapping—made in 24 plants in the United States, Canada, England and Germany.

the quality tells . . . the quality sells

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year 'round
air conditioner

COMPACT . . .

Fits in as little as 3⅗ square feet!
Features Dura-Tube Gas Heating Heart
and powerful air-cooled cooling.

the Wraps are off...

and from this day on the new

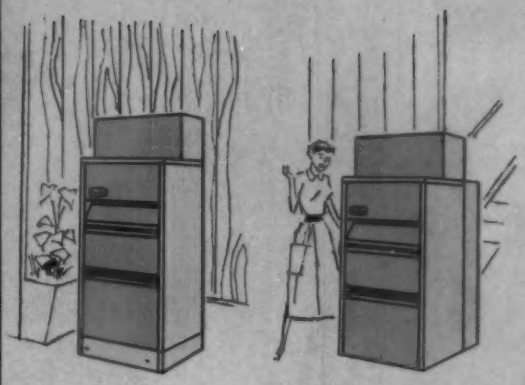
JANITROL

WIN-SUM-MATIC

Year-round air conditioner

is the one to sell and grow with!

New Janitrol Win-Sum-Matic with front panels removed to show compact design and complete accessibility from front.



WIN-SUM-MATIC Model CVC-85 with bottom filter cabinet.

WIN-SUM-MATIC Model CVC-85 with back filter cabinet.

Take the very finest in year 'round air conditioning equipment and make it *even better!* That's what Janitrol has done and this all-new Win-Sum-Matic is the proof.

Here in one compact "package" is surpassing new beauty with wonderful new refinement and elegance of line and color . . . "the look of the future".

Here is new quietness of operation, with thrift that far exceeds accepted standards . . . a whole new concept of efficiency and dependability in performance.

Here is new ease and convenience in installation . . . new flexibility in the wide range of blower and motor combinations . . . new freedom of service and adjustment accessibility. Here, in fact, is everything you need and more to get your share of the booming air conditioning market.

Take a few minutes now to look over the features and advantages only Win-Sum-Matic offers. Then, ask your Janitrol representative—or mail coupon—for full details on how you, too, can sell and grow with Janitrol!

feature-packed for a mighty Sales Punch!

WIN-SUM-MATIC by Janitrol

New, Slim "Look of the Future"! New crisp, clean, uncluttered rectangular design with flush front enhances built-in effect . . . saves valuable floor space. New warm-tone neutral colors with gold accent complement decor of any room—harmonize with other appliances.

New, Compact Cabinet. Height of Win-Sum-Matic CVC120-85 (Combination L) is only 6'-8" including outlet plenum. Width 22½", Depth 40". Easily installed in basements with 7' ceilings. Plenum has knockouts on both sides and front for horizontal take-off.

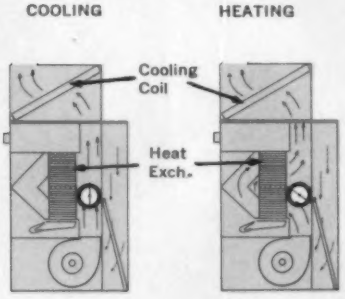
Complete Accessibility from Front. All internal parts are easily reached, simply by removing front panels. Snap-lock panel design. No screws.

Exclusive Season Selector Control. An internal air bypass damper, operated manually or by motor automatically with control by thermostat, provides correct air for heating or cooling without blower adjustments. Damper directs air over heat exchanger for heating, and directly from blower into outlet plenum and evaporator for cooling.

Exclusive PRIDE O' YARD Compressor-Condenser Unit

Special louvered design allows air circulation from all sides while shading condenser from sun at all times . . . boosts efficiency and economy of operation. Rugged, weatherproof construction, with every necessary safeguard for protection of children and pets.

AIR FLOW DIAGRAMS
WIN-SUM-MATIC with Back Filter Cabinet



SEASON SELECTOR (circled) allows straight-through air flow from blower to cooling coil for cooling . . . in winter, directs air through heat exchanger twice for maximum heat extraction.

Exclusive Dura-Tube Heating Heart

Warranted **20 years!** Born of the jet age! New A-19 armor coating, used to protect aircraft engine parts from corrosive, ravaging hot exhaust gases, is fused into all internal and external surfaces and joints—assures permanent sealing, new freedom from corrosion and burn-out. Twin-pass air flow design gives more heating capacity in less space, air passes over heat exchanger surfaces **twice**, resulting in higher heat absorption, true heating economy.

New Waterless Cooling Heart. Compressor-condenser needs only air and electricity, operates at lowest cost. Eliminates water supply and sewage requirements. Reduces service problems. Provides cooling with outside temperatures to 125° F.

New Quietness in Operation. Acoustically treated blower chamber, cushion mounted blower and blower motor, full-floating heat exchanger and air-cooled side panels provide a new concept quiet, smooth performance without annoying vibration or expansion-contraction noises.

Wide Range of Blower and Motor Combinations. Special, new blowers with alternate motors for each size of unit to furnish air deliveries for different cooling capacities in each model—greater installation flexibility.

Sizes to Heat and Cool Any Home. Models with heating input 80,000 to 200,000 Btu. Cooling output 22,000 to 76,000 Btu. AGA approved for natural, mixed or LP gas. (Ask about special approvals for commercial applications.)

Please show me how I can sell and grow with the new Janitrol WIN-SUM-MATIC year 'round conditioners and other quality-built Janitrol products for home comfort.

Name_____

Company_____

Address_____

City_____ Zone_____ State_____

Fill in and MAIL TODAY. No obligation.

Sell and Grow with JANITROL

Ask your Janitrol representative for all the facts, or RUSH the coupon to us today!

From JANITROL—a complete line of gas and oil furnaces, unit heaters, conversion burners, air-cooled summer cooling conditioners, combination heating-cooling conditioners.

EXPANSIVE? — YES .... EXPENSIVE? — NO

Economical wide spans—Steeldomes in place on Central Office Building, Minnesota Dept. of Highways, St. Paul, prior to pouring slab (over R/C Ducts for underfloor electrification). Architects: Ellerbe & Co.; Contractor: Lovering-Sweitzer.

WATERPROOF YOUR BUILDING BUDGET!

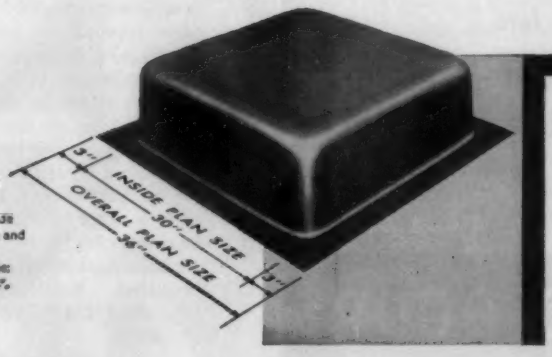
Spring Rains Can't Stop Ceco Steeldome Concrete Joist Construction

Today's emphasis on economy calls for careful control of costs. By choosing Ceco Steeldomes for waffle floor slabs, you can avoid money-consuming delays caused by rain. For Ceco Steeldomes are impervious to the elements . . . never get soggy, limp or distorted. Also, it costs less to place rebars on a rigid Steeldome deck. And Steeldomes are easily removed . . . no costly clean-up. To speed building and to keep expenses down, specify Ceco Steeldomes—the best way to form expansive two-way dome construction. Ceco Steel Products Corporation—General offices: 5601 West 26th Street, Chicago 50, Illinois. Offices, warehouses and fabricating plants in principal cities.

CECO STEEL

IN CONSTRUCTION PRODUCTS CECO ENGINEERING MAKES THE BIG DIFFERENCE

Steelforms / Concrete Reinforcing / Steel Joists / Metal Roof Deck / Windows, Screens, Doors
Cecoframe Buildings / Metal Lath



Ceco Steeldomes provide flexibility to meet span and load requirements. Available in four depths: 8", 10", 12" and 14".

CECO STEEL PRODUCTS CORPORATION
5601 West 26th Street, Chicago 50, Illinois
Please send new catalog No. 4007 covering Ceco Steeldome construction.

Name_____

Firm_____

Address_____

City_____ Zone____ State_____

AR

Accurate Leveling for Elevators

A newly developed motor-pump auxiliary which tucks neatly within the pump unit gives Esco oil-hydraulic elevators extremely accurate "up" leveling without intricate valving arrangements. Since stopping is not dependent on electrically energizing a valve control circuit, the motor-pump method of leveling assures a normal dependable stop in the event of power failure. The low horsepowered auxiliary component also provides a means of moving the car at slow speed throughout the hatchway, and makes it possible to maintain close "anti-creep" settings. *Esco Elevators, Inc., 2309 Chester St., Fort Worth, Texas*

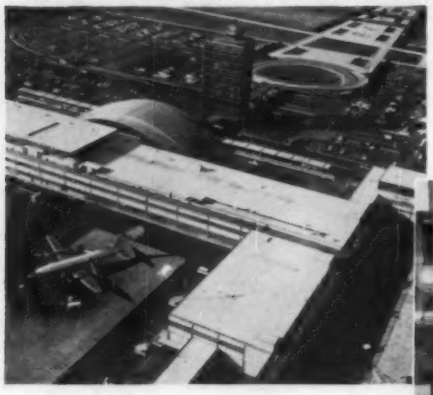
Vinyl-Protected Electrical Conduit

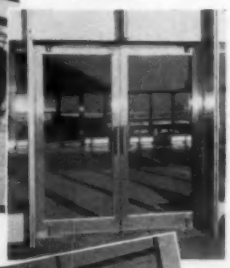
Rigid steel *Sherarduct* electrical conduit has been improved by the addition of a protective coating of a modified vinyl copolymer (MVC-1) over its galvanized surfaces. According to the manufacturer, the new coating has increased elasticity, superior tensile strength, and resistance to abrasion and sharp blows. Tests have shown that conduit coated with MCV-1 is more resistant to chemical corrosion and high temperatures than are other types of galvanized conduit. *National Electric Products Corp., 2 Gateway Center, Pittsburgh 22, Pa.*

NEW YORK INTERNATIONAL AIRPORT

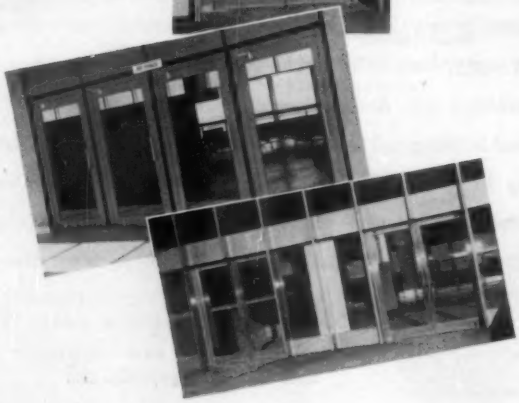
New York, N. Y.

ARCHITECT:
Skidmore, Owings & Merrill





more....
Ellison
doors



60 Balanced Doors in the entrances to New York International Airport.

The Door that lets TRAFFIC through QUICKLY

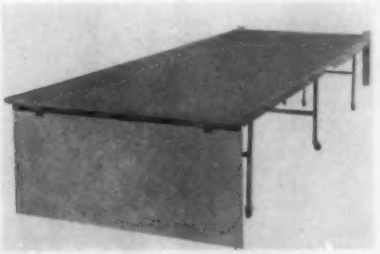
ELLISON BRONZE CO.
Jamestown, New York

representatives in 77 principal cities in the United States, Canada and Puerto Rico

Ellison the BALANCED DOOR

Plastic Foam Pipe Covering

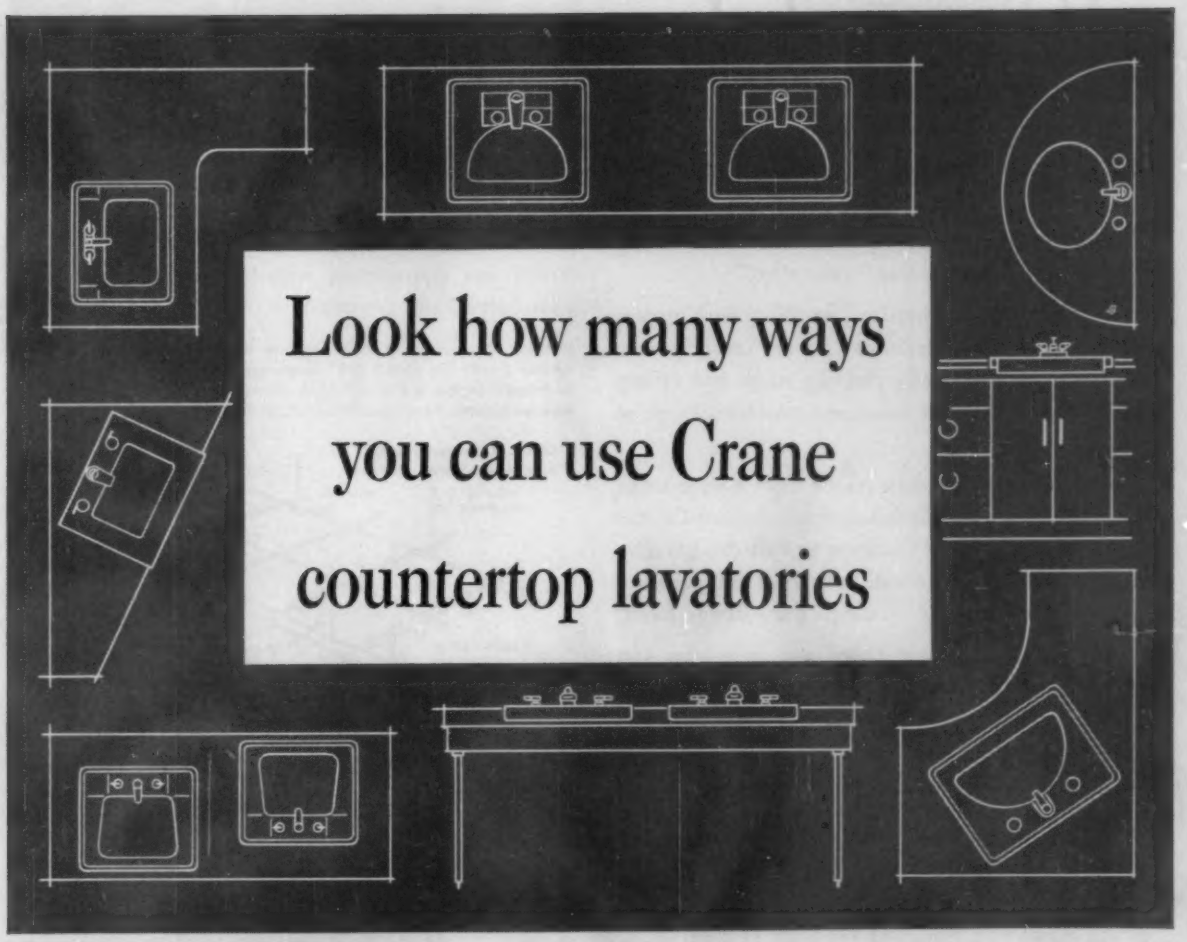
A low temperature pipe covering with pre-adhesive edges is said to cut application time and costs by from 40 to 50 per cent. Available in an extensive range of diameters for virtually every domestic and industrial application, the *Styrofoam* pipe covering provides not only insulation, but a vapor barrier as well. Because the base material is rot-proof, mold-proof and water-proof, it requires no covering or bands. *Pipe Covering Div., Glo-Brite Products, Inc., 6415 N. California Ave., Chicago 45 Ill.*

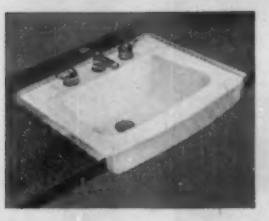


Compact Folding Stage

A new stage that "folds-a-way" into the wall is said to make possible the double advantage of a full-sized stage plus immediate availability of all floor space in gymnasiums, auditoriums, halls or other gathering areas. Each unit may be mounted in an 8 in. recess or flat on the wall, folding and unfolding at the touch of a latch by automatic hydraulic action. Made of 1⅛ in. plywood on an understructure of 1 in. steel tubing, they come in two basic sizes—10 by 4 and 12 by 4 ft—which interlock to give any stage area required. *Haldeman-Homme Mfg. Co., 2580 University Ave., St. Paul 14, Minn.*

more products on page 288





Luxury at a modest price. Crane Westland (above), Crane Countess (left), gleaming vitreous china lavatories priced for smaller budgets. Both feature Crane Dial-ese controls and come in 7 beautiful Crane colors and white.

Crane's larger selection of styles and colors gives you more ways to express your own ideas in bathroom design.

Whether you're planning an L-counter, a corner unit, free-standing counter or vanity with storage—there's a Crane countertop lavatory to make every installation more beautiful and practical.

Crane offers the most complete line of countertop lavatories—9 styles . . . 7 "just right" colors and white . . . vitreous china, cast iron, and porcelain-on-steel. Each one has a deep roomy basin, sparkling trim, simple, crisp lines that make cleaning easy. Plus Henry Dreyfuss styling—the kind that stays new-looking for years.

Why not call your Crane Branch or Crane Wholesaler for full information? Ask for the Crane Architect Representative.

CRANE CO. 836 S. Michigan Ave., Chicago 5 · VALVES · FITTINGS · PIPE · PLUMBING · KITCHENS · HEATING · AIR CONDITIONING

CRANE

THE PREFERRED PLUMBING

New Horizons

. . . in ceiling-design ideas!

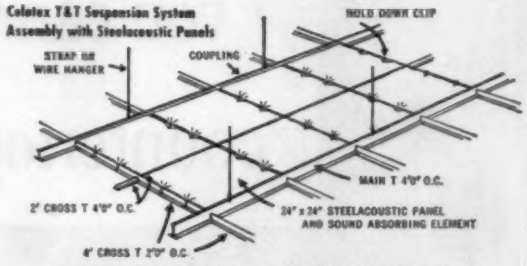
The decorative versatility of these functional ceiling materials helps make ideas "come alive."

Architects everywhere . . . working with expert Acousti-Celotex distributors . . . are creating new beauty in architecturally pleasing room and ceiling designs while solving functional problems in noise control.

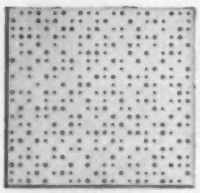
Such planning freedom results from a wide range of products and installation systems. Acousti-Celotex products integrate with heating and air conditioning equipment, Celotex Acousti-Lux translucent panels or other lighting systems . . . enhance any design motif.

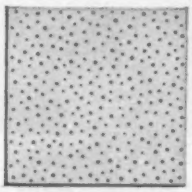
Your Acousti-Celotex Distributor is a man you should know. He has worked with architects on every type of project. His experience and the facilities of his trained service organization are always available. You'll find consultation with him, right from the start, helpful and profitable.

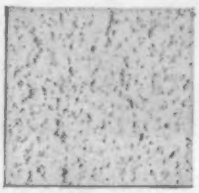
Directors' Room, Bank of Texas, Houston showing ceiling of Acousti-Celotex Cavity Tile on a T & T® Suspension System.
Architects: Duryea & Elkins—John A. Greeson Associated Architects.
Acousti-Celotex Contractor: Straus-Frank Co., Houston.



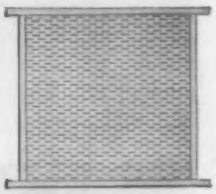
SPECIFICATIONS: Write for portfolio of specifications, including detail drawings, covering this and other ceiling assemblies and Acousti-Celotex applications.

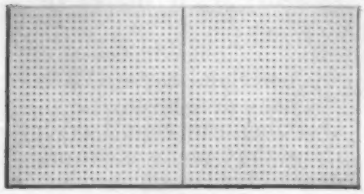

PERFORATED CANE FIBER TILE®

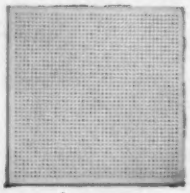

PERFORATED MINERAL TILE®

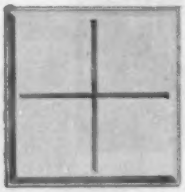

CELOTONE®

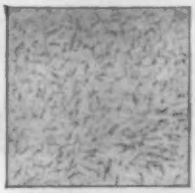
STRIATONE®


STEELACOUSTIC®


ACOUSTEEL®


CAVITY TILE**


ACOUSTI-LUX AND LUMICEL®†


SUPRACOUSTIC PANEL‡

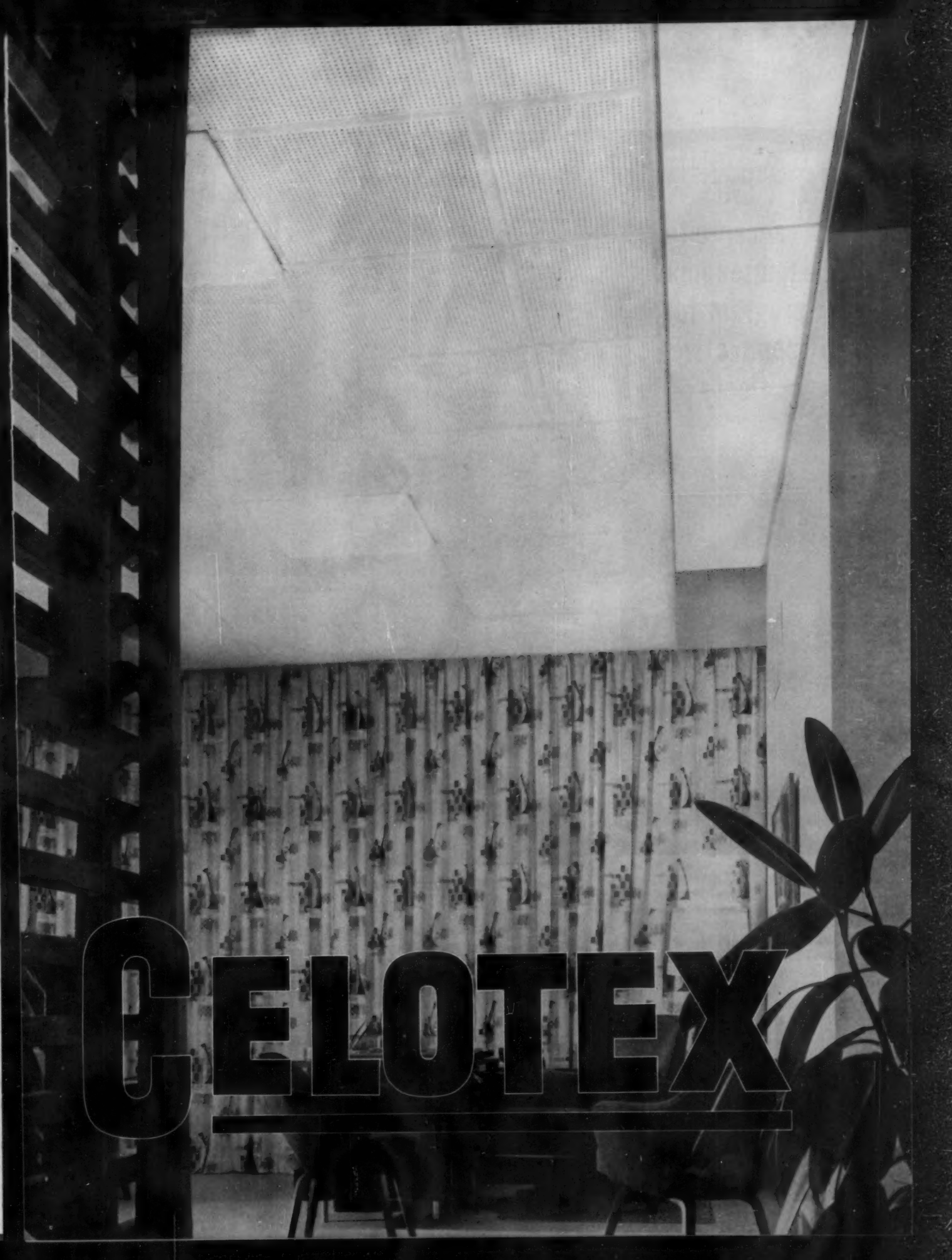
*U. S. PAT. NO. D-188,705 **U. S. PAT. NO. 2,159,488
†U. S. PAT. NOS. 2,210,992 AND 2,710,235 ‡TRADE MARK

ACOUSTI-

TRADE MARK REG. U. S. PAT. OFF.

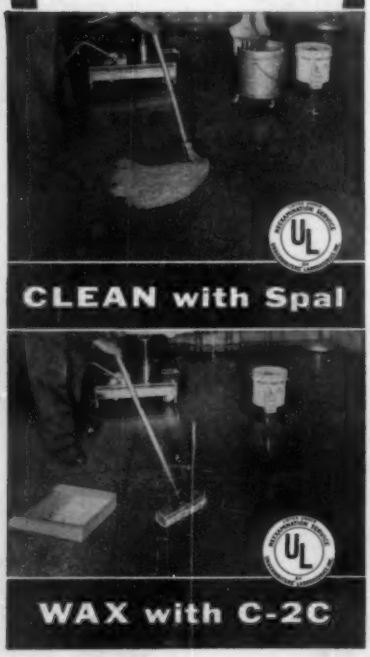
Sound Conditioning **Products to Meet Every Sound Conditioning Problem . . . Every Building Code—**

The Celotex Corporation, 120 S. La Salle St., Chicago 3, Ill. • **In Canada:** Dominion Sound Equipments, Ltd., Montreal, Quebec


CELOTEX

A SAFE, accepted maintenance program for conductive floors

(and listed by Underwriters')



Now you can specify conductive floors and give them the protection of fine wax. Both Spal Concentrate Detergent and C-2C Conductive Wax are listed by Underwriters' as safe for electrically conductive floors. Specify this program for cleanliness and preservation. See your Huntington representative now for more details and write for free booklet "How to Maintain Conductive Floors."

HUNTINGTON LABORATORIES
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Philadelphia 35, Pennsylvania • Toronto 2, Ontario

HUNTINGTON
...where research leads to better products

Product Reports

Wrought Aluminum Furniture

The development of special alloys and welding techniques for fusing aluminum to aluminum has resulted in a durable wrought aluminum that has been used to produce indoor-outdoor furniture only one-third the weight of similar wrought iron pieces. Living room and dining room collections, and a group of casual patio and pool pieces in the solid wrought aluminum come with a permanent, rustproof finish in orchid, lemon, flamingo, tangerine, tropic blue and royal blue, as well as whites and greys. Upholstery can be had in sailcloth or vinyl. *Scroll, Inc., 2301 N. Miami Ave., Miami 37, Fla.*

Cushion-Framed Insulating Glass

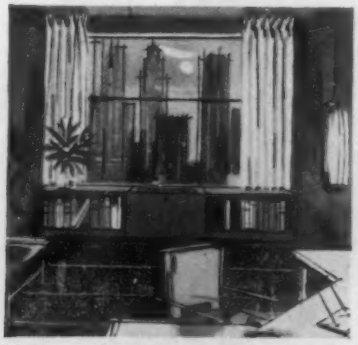
To protect the edges of the double-paned glazing units in handling, shipping, warehousing and installation, a cushioning metal frame has been developed for *Thermopane* insulating glass. The method of sealing the dehydrated air between the lights of glass with a metal-to-glass bond and a flexible metal separator strip has been retained, with the addition of a built-in mastic "cushion" between the light aluminum channel frame and the glass edges. The new protected edge is expected to minimize breakage and damage, and to provide greater handling ease. *Libbey-Owens-Ford Glass Co., 608 Madison Ave., Toledo 3, Ohio.*

more products on page 292

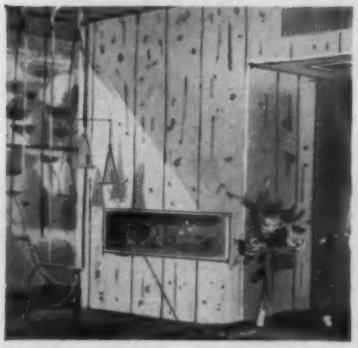
York fan coil units adapt to any interior design

These attractive room treatments are just a few of the many possible with these versatile units. Whether free-standing, free-hanging or furred-in models are selected, you'll find your interior design problems simplified by their compactness and modest water and power-supply requirements.

Free standing unit with decorative casing suits many requirements.



Wall-hung unit with wall-to-wall bookcases is both attractive and functional.



Furred-in ceiling unit solves space problems ... keeps floor-space productive.

YORK CORPORATION
SUBSIDIARY OF BORG-WARNER CORPORATION

AN AIR-CONDITIONING VALUE PACKAGE FROM YORK

NEW FAN COIL UNIT

- **Only York offers this variety of mountings: floor, wall or ceiling . . . with decorative cases or furred-in enclosures!**
- **Year-round system circulates chilled or hot water — or both! No ductwork or central air equipment!**
- **Space, installation, power and maintenance-saving features reduce immediate and future costs!**

Here's good news from York: a packaged fan coil unit that combines important architectural benefits with real savings for building management.

THE DESIGN'S MORE ADVANCED! York's handsome room-units blend with any decor. Their compactness and the small space requirements of water lines mean greater design freedom, more productive floor space. Functionally-designed wall-to-wall enclosures are available if desired.

THE CHOICE IS WIDER! York is the only manufacturer offering a choice of floor, wall, and ceiling-mounted units. There are 20 models to choose from—the longest line in the air conditioning industry.

THE QUALITY'S UNMATCHED! Every model is UL-approved. Few competitive units offer this assurance of trouble-free performance. Permanent split-capacitor motors are standard in York fan coil units. They cut power consumption by as much as 40%, require fewer electrical circuits—and, because they run slower and cooler, have a 30% greater life expectancy. There is no exposed wiring; flexible steel conduit is used throughout.

THE PRICE IS RIGHT! From the moment York fan coil units arrive on site, they start saving money. That's because York designs with the *real cost* of air-conditioning in mind. The features listed above are just a few of the many you'll want explained in detail. Consult your classified directory for the name and address of your local York sales representative . . . or write for Bulletin I-216. York Corporation, York, Pa.

YORK CORPORATION

SUBSIDIARY OF BORG-WARNER CORPORATION

Millions Live Better with York

IN CANADA: CANADIAN ICE MACHINE COMPANY LTD., TORONTO

Photo from exterior. *Warren City Schools Administration Building, Warren, Ohio, is two stories high with the first floor line five feet below grade and second floor line five feet above grade. Entrances are located midway between floors.*

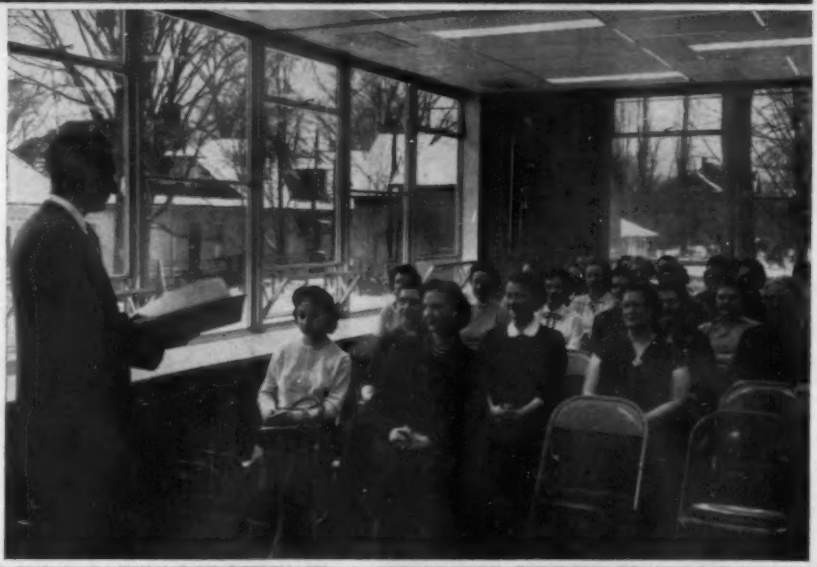
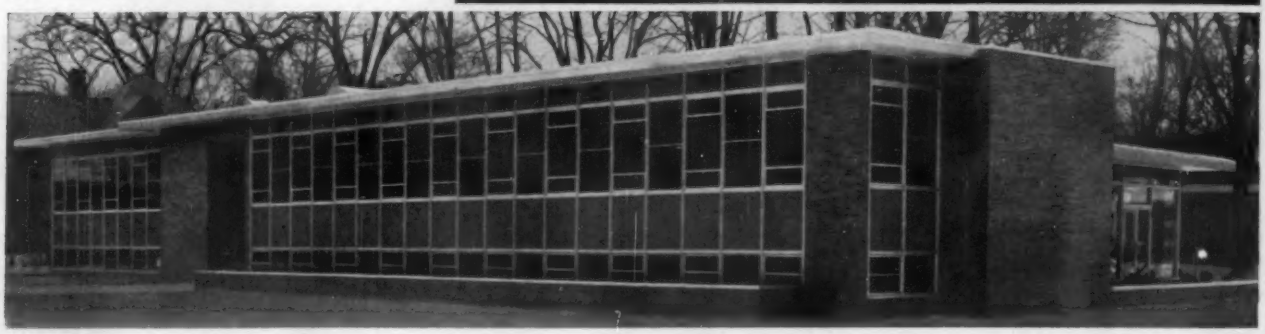


Photo from interior. *Windows of AMERICAN LUSTRAGRAY sheet glass reduce sun glare 50%, minimizing eyestrain and fatigue, yet provide excellent vision.*

Photo from exterior. *AMERICAN LUSTRAGRAY'S neutral shade blends with the aluminum sash and the green porcelain enamel panels.* **Glazier:** *Ohio Glass and Sales, Inc., Warren, Ohio.*



GLARE REDUCING SHEET GLASS

For controlled daylighting, architect Arthur F. Sidells chose

american LUSTRAGRAY

for new school administration building

One of the most impressive uses of AMERICAN LUSTRAGRAY is in this new Administration Building for Warren City Schools, Warren, Ohio. Designed by Office of Arthur F. Sidells, A. I. A., the plans and drawings for this building were selected for exhibit at the 20th International Conference on Public Education in Geneva, Switzerland.

Functional glass, like AMERICAN LUSTRAGRAY, is an important material of modern architecture. It provides controlled daylighting by reducing excessive sun glare and heat. Yet, the "clear glass" vision of AMERICAN LUSTRAGRAY creates a more spacious atmosphere so essential to task efficiency.

From a design standpoint, AMERICAN LUSTRAGRAY permits additional architectural emphasis on the fenestration pattern. When viewed from the exterior, it has sufficient opacity to give a skin wall effect to the building and provides greater privacy to the occupants. Also, the neutral light transmitted by AMERICAN LUSTRAGRAY removes all color restrictions for interior decorations.

This economical glare-reducing sheet glass is available through more than 500 distributors and glazing contractors. Check your classified 'phone directory for listing. For technical data, consult your Sweet's Catalog or write our Architectural Promotion Department.

CLEAR GLASS for Maximum Daylighting
GRAY GLASS for Controlled Daylighting

american
WINDOW Glass COMPANY
PITTSBURGH, PA.

PLANTS: ARNOLD, PA. • ELLWOOD CITY, PA. JEANNETTE, PA. • OKMULGEE, OKLA.

WSW 7102

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Alberene Stone Promptly Available in Thin Slab Thicknesses of ⅞" to 1¼"

The "Dark Accent" of jet black spandrels and mullions—a distinguishing feature of the Eastern Psychiatric Institute in Philadelphia—can be achieved economically with thin, easy to handle slabs of Alberene Stone ⅞" to 1¼" thick.

Alberene Stone is the only natural silicate stone with the surface that goes all the way thru. Its low absorbency rate, fine grain and absence of stratification prevent spalling and splitting in freezing weather. Its all-silicate mineral components resist chemical attack and loss of surface polish.

For full information and technical assistance address: Alberene Stone Corporation, 419 Fourth Avenue, New York 16, N. Y., Dept. R.

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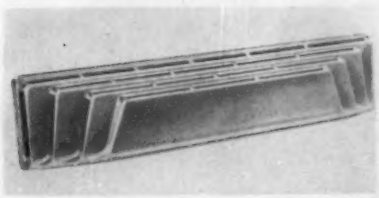
ALBERENE STONE

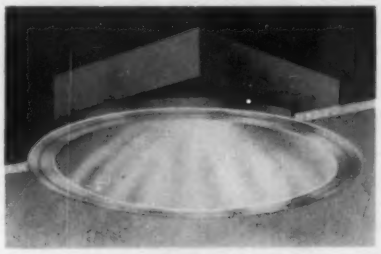
provides LOW ABSORBENCY protection

Product Reports



Adjustable Perimeter Diffuser

A new perimeter diffuser which adjusts to supply separate heating and cooling patterns is said to be the first to provide the proper throw and spread for maximum diffusion efficiency for both heating and cooling. A fingertip adjustment changes the air flow pattern so that cool air is forced to ceiling level, or warm air diffused in a broad pattern over an entire side wall. In addition to its dual adjustability, Model P125 features a built-in damper which adjusts from full open to full closed within the diffuser; fingertip volume control from the side of the diffuser; and a new adjustable base for easier, cheaper installation. It comes in a 24 in. length, with a neutral finish. *Titus Mfg. Corp., Waterloo, Iowa*



Plexiglas-Domed Luminaire

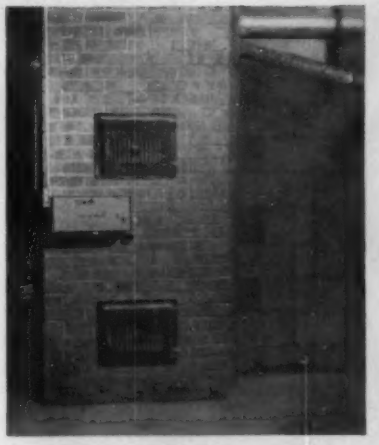
A new series of white translucent plexiglas domes in diameters of from 2 to 6 ft has been developed for use singly or in groups in a wide range of commercial and institutional applications. Although the visible portions of the units are round, the recessed parts concealed by ceiling plaster or acoustical tile are square to accommodate standard size fluorescent lamps efficiently. (The units use from four 20 watt Trigger Start lamps in the 2 ft fixture to twelve 40 watt Rapid Start lamps in the 6 ft size.) The *Plexlite* "bubbles," which may be installed in either the concave or convex position, are 3 in. deep on the 2 ft unit; 5 in. deep on the 3, 4, 5 and 6 ft units. *Gruber Brothers, Inc., 125 S. First St., Brooklyn 11, N. Y.*

more products on page 296

INCINERATION

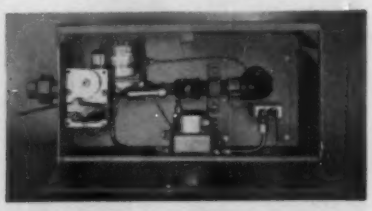
Here's Incinerator Information exclusively for the Architect

Donley offers a scientific approach to the problems of providing proper incineration for institutional, commercial and apartment buildings to increase their functional value and decrease fire hazards



APARTMENT AND INSTITUTIONAL flue-fed incinerator is fed through hopper doors on each floor.

COMMERCIAL AND INDUSTRIAL direct-fed incinerators for on-the-spot disposal of excelsior, rubbish, etc.



AUTOMATIC SAFETY BURNER (No. 300) features blowout-resistant safety pilot... adjustable electric timer . . . 100% flame-failure protection.*
*Patent pending

For years architects have needed a consistent scientific approach to the complex problems of incineration. Wide variations in city ordinances and building codes have further compounded their problems. In other cases, architects themselves have overlooked the importance of providing for waste disposal.

Donley offers guidance free of charge to architects to solve their special incinerator problems using Donley's field-tested designs and equipment that meet the standards of leading fire insurance companies.

Incinerators built with Donley parts and designs assure successful operation with different types and volumes of waste because they control or provide for the following essential operating features:

1. Combustion chamber design
2. Distribution of combustion air
3. Frequency of burning
4. Combustion time
5. Flame distribution
6. Temperature

Donley advocates the principle of frequent small fires for immediate waste disposal without high draft to minimize smoke, fly-ash and odor. This principle offers the added advantage of increasing incinerator life by avoiding prolonged high temperatures common to once-a-day burning.

When you specify a Donley Incinerator, detailed dimensional drawings, list of materials and all metal and mechanical parts are supplied by Donley for installation by local brick masons.

Write today for complete information.

Founded in 1895

Donley

A Member of the Incinerator Institute of America

1910-DB

THE DONLEY BROTHERS COMPANY
13972 Miles Avenue • Cleveland 5, Ohio

Please send me free of charge your Donley Incinerator Catalog.

NAME_____

COMPANY_____

STREET_____

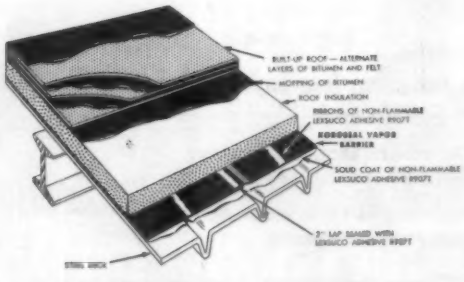
CITY_____ ZONE_____ STATE_____

B.F.Goodrich

Big areas get covered fast *the Lexsuco mechanical way! Here a Lexsuco applicator finishes three operations in one pass—applies non-flammable Lexsuco Adhesive R907T to the underside of the Koroseal Vapor Barrier, lays and secures the Koroseal, and puts ribbons of adhesive on top for securing insulation.*

Lexsuco roof constructions with

. . . fire retardant, maximum vapor


BUILT-UP ROOF — ALTERNATE LAYERS OF BITUMEN AND FELT
MOPPING OF BITUMEN
ROOF INSULATION
RIBBONS OF NON-FLAMMABLE LEXSUCO ADHESIVE R907T
KOROSEAL VAPOR BARRIER
SOLID COAT OF NON-FLAMMABLE LEXSUCO ADHESIVE R907T
2" LAP SEALED WITH LEXSUCO ADHESIVE R907T
STEEL DECK

Typical Lexsuco roof construction with Koroseal vapor barrier

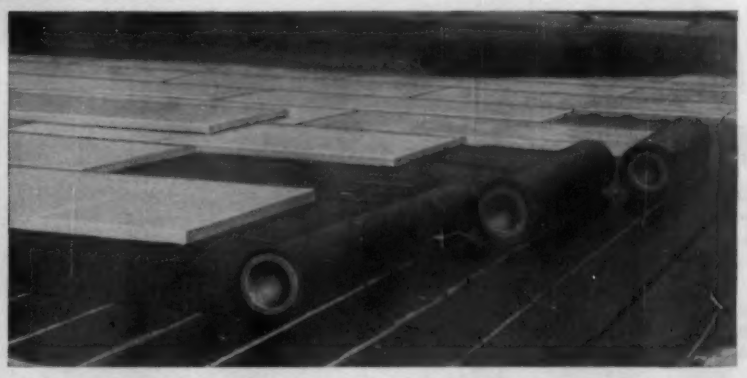
WHEN you specify Lexsuco Roof Constructions with a Koroseal Vapor Barrier, you assure three major benefits—(1) a fire retardant construction with Factory Mutual Class 1 rating; (2) maximum vapor barrier protection; and (3) fast, economical installation.

Lexsuco Roof Contructions with Koroseal Vapor Barrier will not feed a fire because there is no asphalt between roof deck and insulation to give off flammable gases. Fire-retardant Koroseal replaces asphaltic materials.

Koroseal is a proved vapor barrier. It eliminates moisture migration from within building, prevents pitch drippage,

Lexsuco's semi-mechanical method *is fast for medium or small jobs. Ribbons of adhesive are applied with spreader and rolled into a solid coat for securing Koroseal. Then insulation is embedded into the ribbons of adhesive spread over the Koroseal. It's like a production line! A manual method also is practical for small jobs using pouring can instead of spreader.*

B.F.Goodrich Koroseal Vapor Barrier *is a specially compounded fire retardant vinyl material. There is no "or equal".*



This photo shows the steps. *Steel deck, adhesive, Koroseal, adhesive, insulation. Final step is installation of built-up roof layers.*

Koroseal® vapor barrier

resistance, easily installed

helps retain maximum insulating value.

The illustrations above show some typical application methods. Whether your roofing job is large or small, Lexsuco methods and tools help you cut installation costs. Koroseal Vapor Barrier is a specially compounded fire retardant material made by *B.F.Goodrich Industrial Products Company, Marietta, Ohio.*

Mail this coupon for detailed information:

LEXSUCO INC
Dept. AR-4
Box 326, Solon, Ohio

Please send me informative folder on the Lexsuco system of roof construction.

Name_____

Company_____

Address_____

City_____ Zone____ State_____

B.F.Goodrich Koroseal vapor barrier

A sign of efficiency

for every type of building

Wherever you see Kinnear Rolling Doors, you can be sure there's a high level of efficiency in handling plant traffic — plus other important advantages.

The coiling upward action of the *Kinnear-originated* interlocking steel-slat door curtain makes all space around the door fully usable all the time.

Kinnear Motor Operators add quick, easy, push-button control to this efficiency. They permit you to control any number of doors from a single point, or each door from any number of points.

This cuts traffic delays and bottlenecks and promotes *prompt* door closure, reducing loss of heated air in winter, cooled air in summer.

In addition, Kinnear Rolling Doors assure extra all-steel protection against wind, weather, fire, intrusion and vandalism.

You can't beat Kinnear's 60-year record for providing long, low-cost, dependable door service under hardest daily use. Kinnear Rolling Doors — built to fit any opening — are easily installed in old or new buildings.

Write today for catalog or recommendations.

KINNEAR
ROLLING DOORS
Saving Ways in Doorways

The KINNEAR Mfg. Co.
Offices and Agents in All Principal Cities

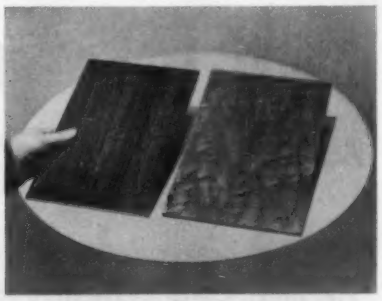
Heavily Galvanized! 1.25 oz. of pure zinc per sq. ft. of metal (ASTM Standards) gives Kinnear Rolling Doors **lasting** protection from the elements. Special Kinnear Paint Bond permits paint to be applied immediately after doors are erected, assuring thorough coverage and lasting adhesion.

FACTORIES: 1860-80 Fields Ave., Columbus 16, Ohio; 1742 Yosemite Ave., San Francisco 24, Calif.

Product Reports

Polyester Laminating Film

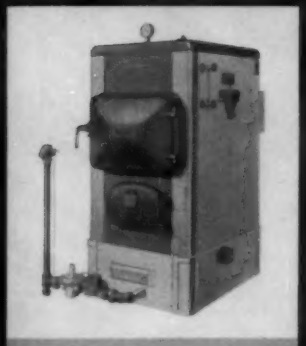
The combination of protective and decorative properties found in *Videne A*, a newly introduced polyester laminating film, are expected to find wide application in the end products of a number of basic industries related to the building field. The near water-clear film is an unoriented, amorphous material which cannot be crystallized. Characteristically it has excellent abrasion and chemical resistance in addition to exceptional aging, electrical, adhesive and forming properties—all of which can be transmitted to a variety of substrata. *Videne A* laminates under heat and pressure to textiles, wood, paper, metals and most rigid and semi-flexible plastics. In the case of metals and plastics, the base material can be successfully formed by standard techniques after lamination. *Goodyear Tire & Rubber Co., 1144 East Market St., Akron 16, Ohio*



Oil-fired units are equipped with a Kewanee pressure atomizing burner for No. 1 or No. 2 oil. Firing rate is matched to boiler capacity. Burner and controls are shipped in separate, protective cartons, ready for wiring. Insulated metal jacket shown is optional.

new packages!

15 lb steam or 30 lb water
216,000 to 1,800,000 Btuh



Gas-fired units feature Kewanee's atmospheric type drilled port gas burner for natural, mixed, manufactured or L.P. gases. Firing is automatic . . . matched to boiler capacity. Burner and controls are shipped in separate, protective cartons . . . installation is easy.

KEWANEE® SQUARE-HEAT TYPE "R" BOILER-BURNER UNITS

All 12 sizes of one of the best-known, best-*proven* boilers for domestic and commercial heating are now available with matching burners for gas or oil.

Ideal for service in small to medium buildings and larger homes, Kewanee Square-Heat Type "R" Units are quiet, efficient and dependable. Their record is established, you *know* what to expect from them.

Even the largest sizes take little floor space and fit easily under an 8-foot or even a 7-foot ceiling. All the famous Kewanee features are there: 3" fire tubes expanded into tube sheet holes with ends beaded . . . large firebox for complete combustion . . . cast iron flue door, machine ground and refractory insulated . . . widely spaced tubes, large disengaging area and ample steam space.

See your Kewanee Man for further facts . . . or send coupon at right to: AMERICAN-STANDARD, KEWANEE BOILER DIVISION, 105 Franklin Street, Kewanee, Illinois.

American-Standard
Kewanee Boiler Division
105 Franklin Street, Kewanee, Ill.

KEWANEE 1868 1958 90th year

Please send descriptive literature and catalog sheets on the new Kewanee Square-Heat Type "R" packaged units.

Name_____

Firm_____

Street_____

City_____ Zone____ State_____

AMERICAN-STANDARD PRODUCTS

AMERICAN-Standard
KEWANEE BOILER DIVISION

MARBLE...

The Mutual Benefit Life Insurance Building in Newark, New Jersey, was given the William E. Lehman Award for outstanding architectural design. Editorially, the building was called "a symbol and igniting force behind the chain of events forming the blueprint of Newark's redevelopment." And no small factor in the distinction achieved by the architectural firm of Eggers and Higgins was the profuse use of marble.

Marble is used with magnificent effect in the main entrance lobby, all elevator lobbies, in washrooms and toilets, on walls and floors, for superb decoration, and for sensible, low-maintenance utility. Wherever used it adds beauty, reduces cost, provides distinction.

Yet even the initial cost was low, since less than 1.2% of the building cost was absorbed by the marble.

Here again, Marble *proves* its economy, a fact that has been clearly demonstrated in a comprehensive study "Proof that Marble Costs Less..." *Write now for your free copy to*

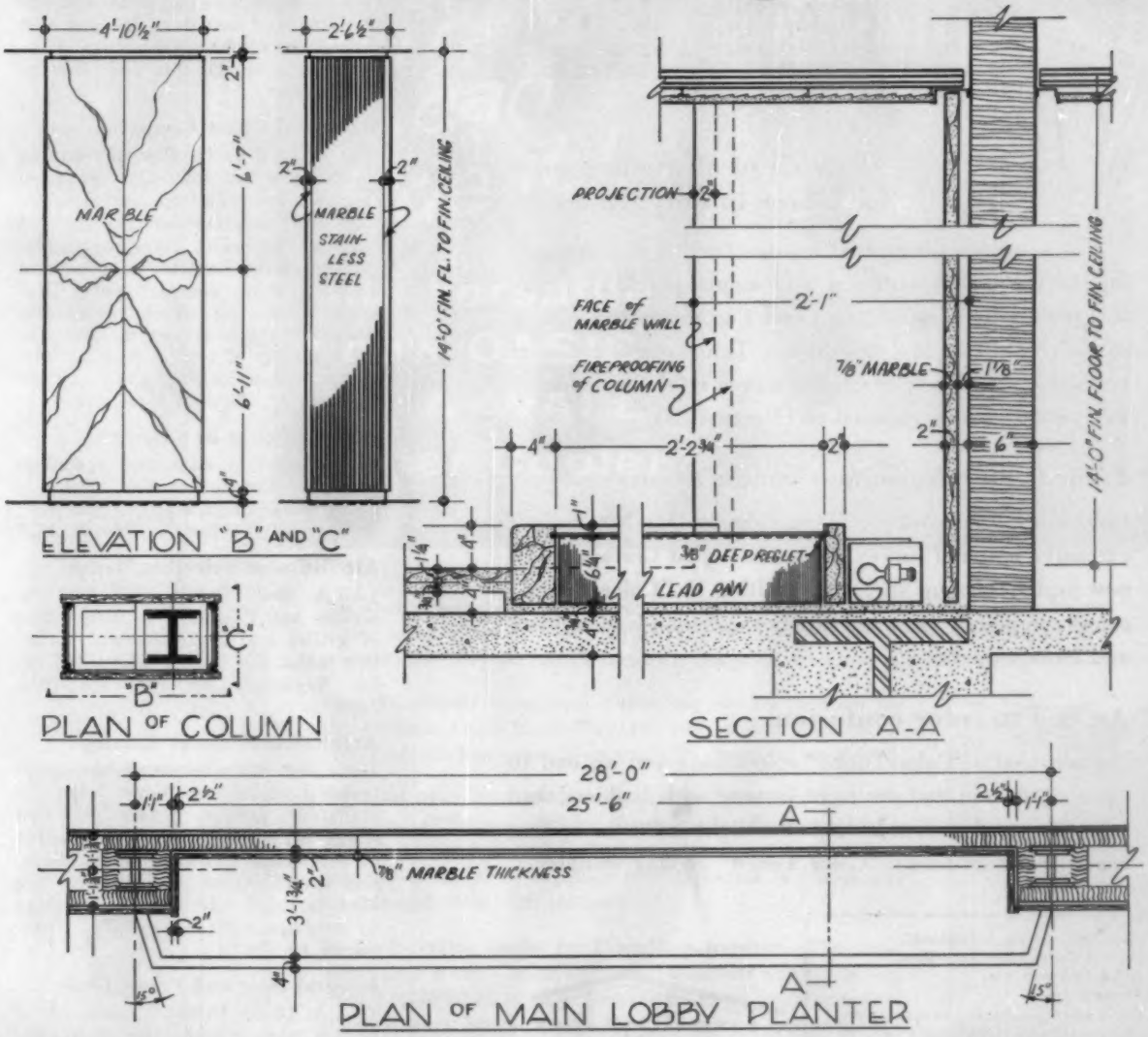
MIA

MARBLE INSTITUTE OF AMERICA, INC.

32 SOUTH FIFTH AVE. • MOUNT VERNON, NEW YORK

MUTUAL BENEFIT LIFE INSURANCE BUILDING, NEWARK, N. J.; EGGERS & HIGGINS, ARCHS.

in an award winning building



Certain-teed® Research Report for Architects

95% of all roofing sales have been in only ten colors

Green accounted for one-third of all shipments for the first nine months of a 12 month period . . . gray was popular in the Northeast and Pacific coast . . . black in the Northeast and Southwest. Tan, brown, red were popular on the West coast. Each area reflecting colors to harmonize with its regional architecture.

Famed color consultant conducts survey

Color consultant, Beatrice West, from findings based on an extensive national survey, has color-styled Certain-teed's new asphalt roofing line. The resulting 10 "Color-Tuned" colors completely meet and satisfy the demands of builders and home owners.

An end to color confusion

Certain-teed's "Color-Tuned" colors have put an end to color confusion, and are right in tune with builders' and home owners' demands. For the right color in roofing specify Certain-teed's "Color-Tuned" roofing shingles.

Color Service Division, Dept. ARC
Bestwall Certain-teed Sales Corp.
120 E. Lancaster Ave.
Ardmore, Penna.

Please send me additional information on Certain-teed's 10 "Color-Tuned" colors.

Name.....Title.....
Company.....
Street.....
City.....Zone....State.....

The Top Ten

Mail coupon for information regarding report that determined the Top Ten Roofing Colors.

Certain-teed®

Products of Certain-teed Products Corporation

SOLD THROUGH

BESTWALL CERTAIN-TEED SALES CORPORATION

120 East Lancaster Avenue, Ardmore, Pa.

EXPORT DEPARTMENT: 100 East 42nd St., New York 17, N.Y.

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CHICAGO HTS., ILL.	DETROIT, MICH.	MINNEAPOLIS, MINN.	TACOMA WASH

Office Literature

continued from page 242

Industrial Stack (A.I.A. 35-I-24)
Gives product information, installation methods, specifications, and application and test data for low cost refractory smoke stack. 8 pp. *Van-Packer Co., P. O. Box 306, Bettendorf, Iowa**

Sanymetal Toilet Compartments
(A.I.A. 36-H-6) Catalog 95 contains a complete set of color samples, standard specifications, and descriptions of construction features of Sanymetal toilet compartments, shower stalls, hospital cubicles and dressing room compartments. Diagrams showing dimensions and mounting methods are included, as are a variety of typical floor layouts. 28 pp. *Sanymetal Products Co., 1689 Urbana Rd., Cleveland 12, Ohio**

Standby Power by Caterpillar
Gives selection data and specifications for Caterpillar line of emergency power units. 8 pp. *Engine Div., Caterpillar Tractor Co., Peoria, Ill.**

Air Diffusion Selection Manual
(A.I.A. 30-J) Catalog No. 1-58 describes and illustrates complete line of grilles and registers, with selection tables and details. 54 pp. *Waterloo Register Co., Inc., Waterloo, Iowa*

Architectural Stocks Catalog
Lists and describes available architectural aluminum items, with installation details, procedures and suggested specifications. Information on properties and selection of alloys, and specifications for finishes are also included. *Aluminum Company of America, 1501 Alcoa Bldg., Pittsburgh 19, Pa.**

Integral Door and Frame Units
(A.I.A. 16-A) Presents complete selection and specification data for *Pyrodor* integral door, frame and hardware units. 24 pp. Catalog DHS-2458. *Dusing & Hunt, Inc., Dept. D, 63 Lake St., Leroy, N. Y.**

Sheet and Plate
Comprehensive treatise covers aluminum's characteristics and its practical applications for a variety of sheet and plate fabricated parts and assemblies. 320 pp. Request on letterhead from *Technical Editor, Kaiser Aluminum & Chemical Sales, Inc., 919 N. Michigan Ave., Chicago 11, Ill.**

**Additional product information in Sweet's Architectural File, 1958*

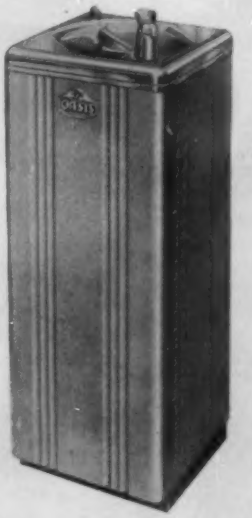
more literature on page 304

So thin an 8" wall can hide it!

the versatile new OASIS IN-A-WALL Water Cooler

It's Oasis' latest—a super-compact water cooler. Supplies refreshingly cold water to as many as 4 new *or already installed* remote drinking fountains in restaurants, office buildings, factories, hospitals, institutions, *and homes.*

Easy To Install—structural limitations are no problem for the versatile Oasis In-A-Wall. It's *built thin to build in* . . . and it mounts just as easily on a joist, in closets, or on-a-wall.



TWO MODELS AVAILABLE—the small Oasis model, IW-5, supplies 5 GPH, sufficient for 60 persons in offices or schools, and 35 in light industry. The large model, IW-10, has a capacity of 10 GPH, adequate for 120 people in offices and schools and 70 in light industry.

An Oasis Water Cooler For Every Requirement—The complete Oasis Water Cooler line includes models with capacities from 2 to 35 GPH, hand or foot operated, pressure or bottle, stainless steel, heavy duty, explosion proof, air-sealed industrial, cafeteria, juvenile, refrigerated compartments, and the famous Oasis Hot 'n Cold which makes piping hot water, as well as cold water.

Mail coupon for specifications and roughing-in details

OASIS

WATER COOLERS

The Ebco Manufacturing Company, Columbus 13, Ohio

Manufacturers of the most complete line of water coolers

DISTRIBUTED IN CANADA BY G. H. WOOD & CO., LTD.

Ebco Manufacturing Company
Dept. 2-F, Columbus 13, Ohio

Send Oasis In-A-Wall specifications and roughing-in details.

name_____

company_____

address_____

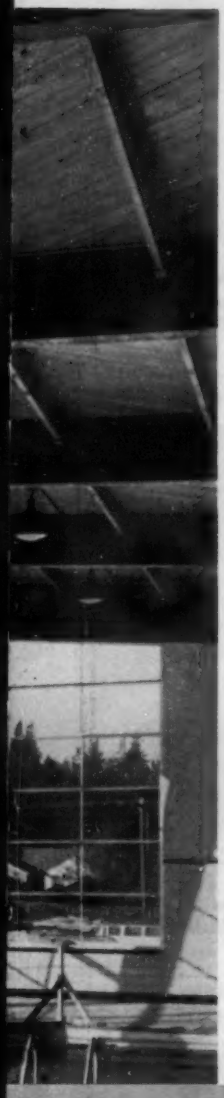
city_____ zone_____ state_____

$350,000 INDOOR-OUTDOOR POOL

in OREGON CREATED with

THE "OVERHEAD DOOR" TRADE MARK

PANORAMIC Aluminum Door



Eight sets of upward-acting Panoramic aluminum doors —plus sixteen sets of matching aluminum-and-glass panels —are combined to make the West's newest pool!

Utilizing the unique design and construction advantages of The "OVERHEAD DOOR" Panoramic Aluminum Door to the fullest extent, Stevenson and Thompson have produced this outstanding swimming pool with the protection of an *indoor* pool . . . the free-and-easy aspects of an *outdoor* pool. At a flick of the wrist, each of The "OVERHEAD DOOR" Panoramic Aluminum Doors can be raised to let in the out-of-doors . . . or lowered to guard against weather!

The construction of The "OVERHEAD DOOR" Panoramic permits stiles and rails to be narrower yet far stronger than ever before. The clean, modern lines—and the clear glass panels—make the Panoramic suitable for the smartest installations. Little wonder, then, that The "OVERHEAD DOOR" Panoramic is being specified by more and more architects throughout the nation.

For 37 years, architects have specified The "OVERHEAD DOOR" more than any other brand!

OVERHEAD DOOR CORPORATION

General Offices: Hartford City, Indiana • Manufacturing Distributors: Cortland, N. Y.; Hillside, N. J.; Lewistown, Pa.; Marion, Ohio; Nashua, N. H. • Manufacturing Divisions: Dallas, Tex.; Portland, Ore. • In Canada: Oakville, Ontario

© 1956, O.D.C.

Exterior view of pool at North Bend, Oregon, shows the smart, modern lines created with The "OVERHEAD DOOR" Panoramic. Architect—Gordon Trapp; Engineers—Stevenson and Thompson; Contractor—A. T. Fox.

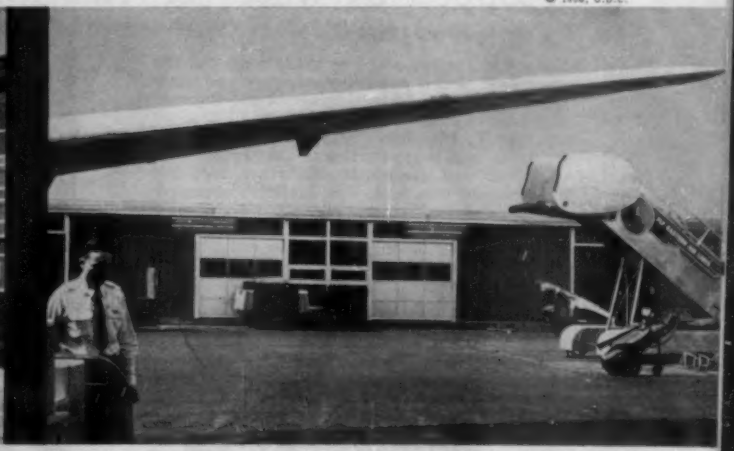
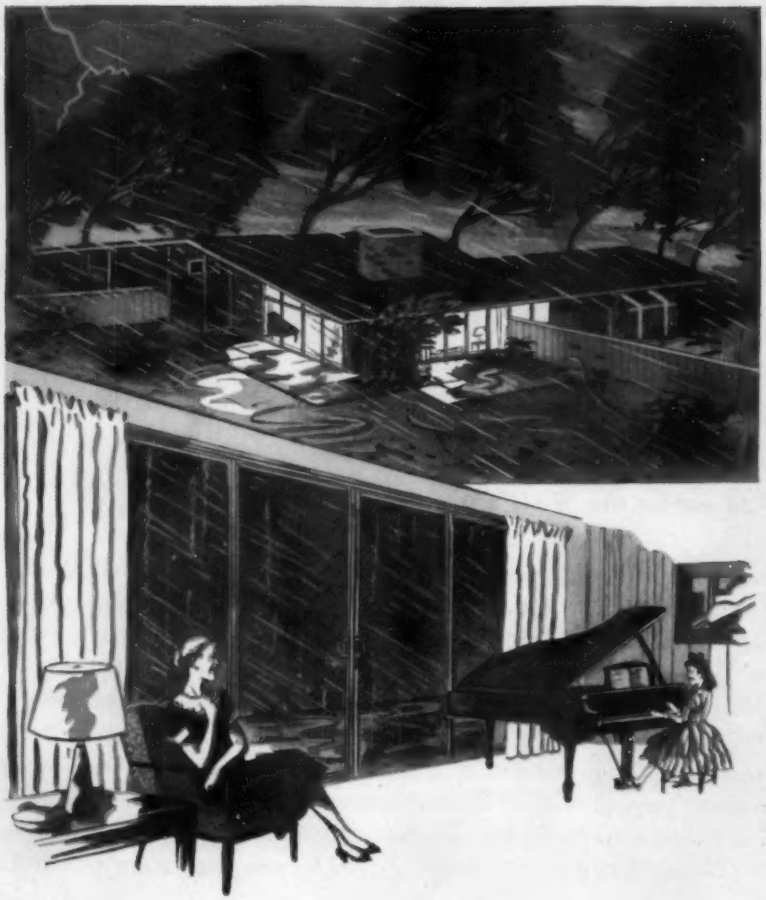


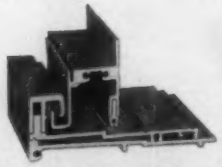
Photo above shows one of the many installations of The "OVERHEAD DOOR" Panoramic Aluminum Doors at Lee Terminal, Standiford Field, Louisville, Ky. Architects Arrasmith and Tyler utilized the attractive, lightweight Panoramic Aluminum Doors to combine modern beauty with fast, easy operation throughout the terminal.



ONLY Fleetlite Sliding Glass Doors
HAVE PASSED THIS TEST!

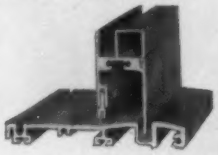
100 mph. winds and heavy rains
stopped by water barrier threshold

Before you select a sliding glass door, ask the question, "will it protect costly rugs and hardwood floors from water damage in pouring rain and high winds?" The answer is YES when you specify Fleetlite. These doors give protection in a man-made hurricane of 100 mph. with a 2" per hour downpour. No other door has ever passed this test. The Fleetlite exclusive "water barrier" double threshold and double weather seal block winds and water . . . provide automatic drainage so water cannot build up from the outside. Fleetlite Sliding Glass Doors are quickly installed, easily adjusted and are maintenance free. Write today for literature and complete information.



Above: Cross section of Fleetlite double threshold that blocks wind and water.

Below: Fleetlite flat threshold is recommended only for interior sliding door installations where weather is no problem.



Fleetlite
AMERICA'S Finest WINDOW ®

FLEET OF AMERICA, INC.
Dept. AR-48, 2015 Walden Ave., Buffalo, N. Y.

Office Literature

Nailed Trussed Rafters

. . . *for Industrial and Farm Structures* offers design and test data on nailed trussed rafters for industrial and farm buildings not requiring ceilings. Special Report No. 33. *Wood Research Laboratory, Virginia Polytechnic Institute, Blacksburg, Va.*

Submersible Pump Catalog

(A.I.A. 29-D-5, 30-C-5) Lists physical dimensions, pumping capacities, electrical data and specific features of complete line of domestic and industrial submersible pumps. 8 pp. *Kenco Pump Div., 1309 Oberlin Ave., Lorain, Ohio*

School-Room Heating

. . . *and Ventilating Systems* presents requirements for classroom comfort, and describes performance, design and applications of Norman school heating and ventilating systems. Specifications and engineering drawings are included. *Norman Products Co., 1150 Chesapeake Ave., Columbus, Ohio* *

Distribution Switchboard

Lists features, application data, protective device information, system applications and selection, dimensions and guide-form specifications for new low-voltage distribution switchboard. Catalog GEA-6627, 32 pp. *Advertising & Sales Promotion, Distribution Assemblies Dept., General Electric Co., Plainville, Conn.*

Classrooms for Easy Listening

Discusses classroom acoustical design in layman's language, with simple explanatory drawings. 16 pp. *Flexicore Co., Inc., 1932 Monument Ave., Dayton 2, Ohio**

Stage Equipment and Components

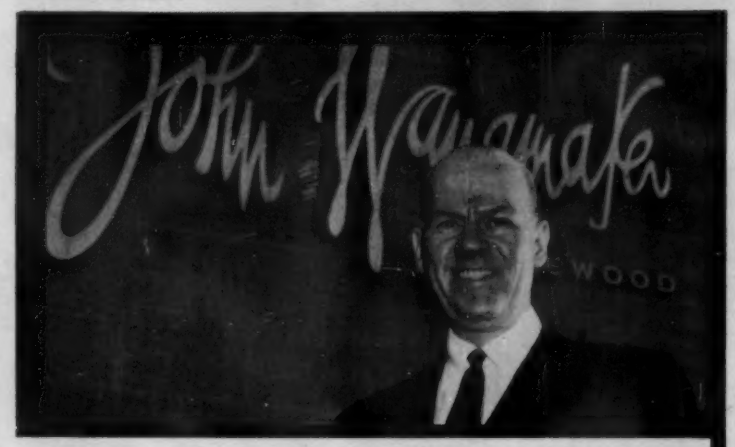
Specifications and Drawings of Stage Equipment and Components contains 60 pages of specifications and drawings covering every phase of stage design. A stage equipment catalog, *The Stage and Its Problems,* is also available. *Hubert Mitchell Industries, Inc., Hartselle, Ala.*

Door Closer Catalog

Discusses selection, operating principles, and installation and regulation of door closers and door closer parts. *Norton Door Closer Co., Berrien Springs, Mich.**

**Additional product information in Sweet's Architectural File, 1958*

more literature on page 308



Mr. Sydney H. Silk, Operating Manager of John Wanamaker's Wynnewood, Pennsylvania, store, says: "Scott worked with our own planning staff while our washrooms were still in the designing stages. These rooms have proved to be very satisfactory for our needs—and our employees like them!"

This washroom incorporates many of the sound principles of Scott's Washroom Advisory Service: recessed wall receptacles, off-the-floor equipment, recessed lighting, easy-to-maintain tile walls and floor, proper traffic flow from washbowls to towels to exit doors. Such efficient facilities will, over the coming years, pay for themselves!

Female employees enjoy a well-planned combination lounge-locker-washroom—and this one serves about 150 people without crowding. Wanamaker had several excellent reasons for calling on Scott: (1) the firm uses Scott products in all stores, (2) knew that Scott has serviced over half-a-million washrooms, (3) is always concerned with employee comfort and happiness, and felt that Scott had the answers.

another case of modern, cheerful, efficient washrooms . . . with the help of Scott's Washroom Advisory Service!

There's no charge or obligation when you call on Scott's Washroom Advisory Service. Find out about it. Get Scott's free booklet on the subject of washrooms . . . complete with illustrations, diagrams, ideas. Mail the coupon today!

SEE SCOTT'S 14-MINUTE FILM
ON WASHROOM PLANNING!
(It offers many "quick change" ideas too—to save you money, boost efficiency now!)

Scott Paper Company
Department AR-84
Chester, Pennsylvania

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☐ Please let me know how to see the Scott film

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Title_____

Company_____

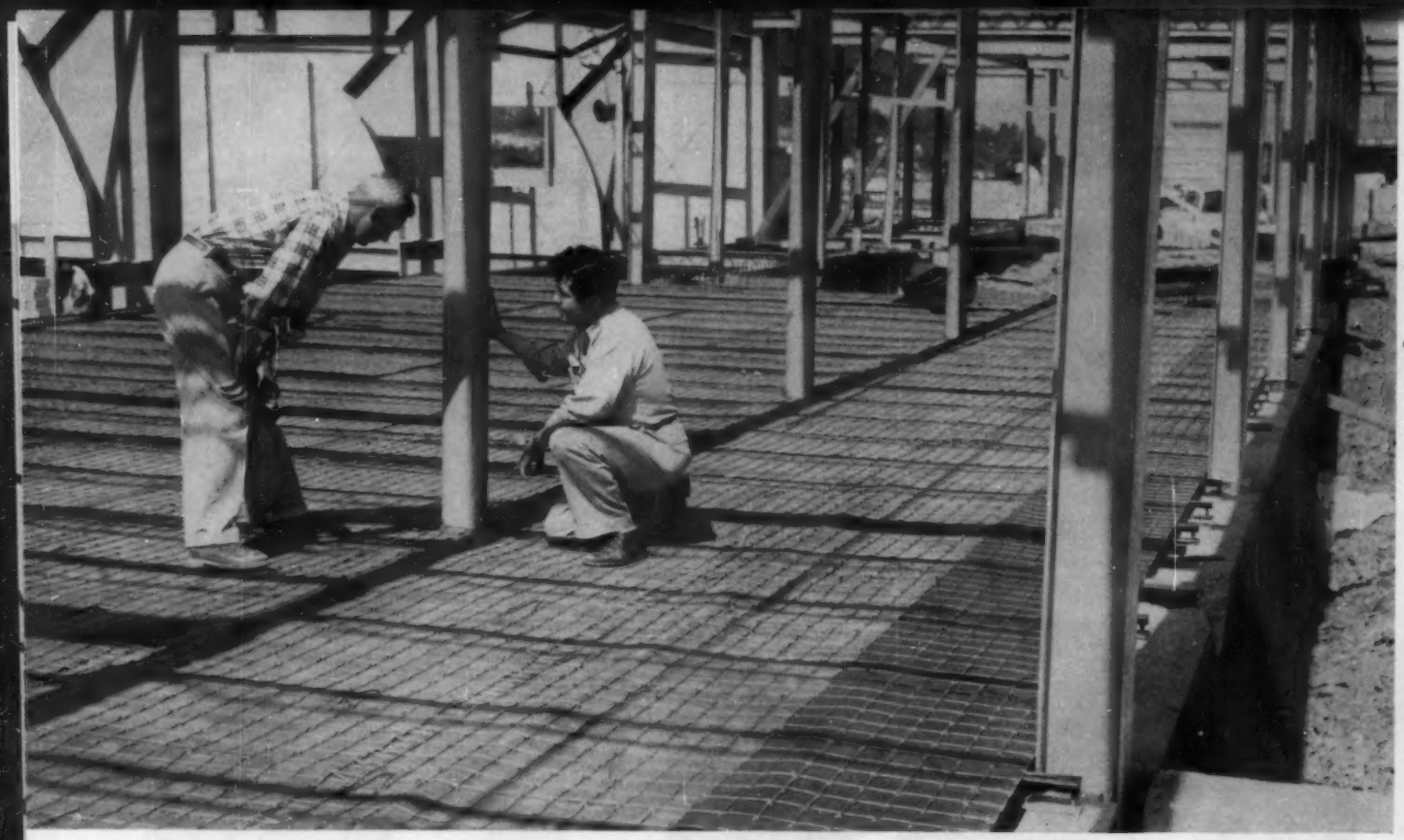
Address_____

City_____ Zone____ State_____

SCOTT PAPER WASHROOM ADVISORY SERVICE®

See "Father Knows Best" on NBC-TV!

For information on Scott recessed cabinets, write: D. J. Alexander Corporation, 2944 East Venango Street, Philadelphia 34, Pa.



Fastest coverage with Steeltex. Steeltex roll, 125 feet long and 4 feet wide, unrolls quickly and is easily cut to fit around irregular-shaped objects like the steel columns shown above at Penn Township Senior High School near Pittsburgh. Steeltex provided reinforcing and form for 100,000 square feet of floors at this school.

12-Point Comparison Proves

Steeltex Floor Lath Provides Quality Construction But Can Cost Less Than Competing Materials

For more than 30 years, quality-conscious architects, engineers and contractors have specified Steeltex Floor Lath sold by Pittsburgh Steel Products Division of Pittsburgh Steel Company.

They realize that as a centering material—specially designed for joist construction—Steeltex speeds work, cuts costs and improves the quality of construction. That's why Steeltex has provided form and reinforcing for millions of square feet of floors and roofs set on steel, concrete and wood joists.

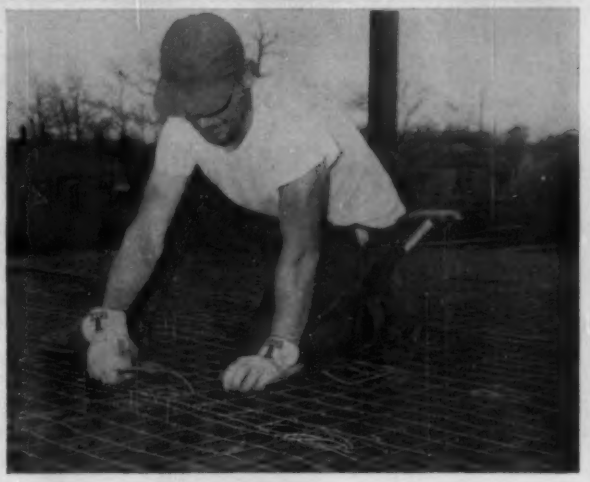
Here, at right, are 12 critical points of comparison which show why these men choose Steeltex over other centering materials.

12-Point Comparison

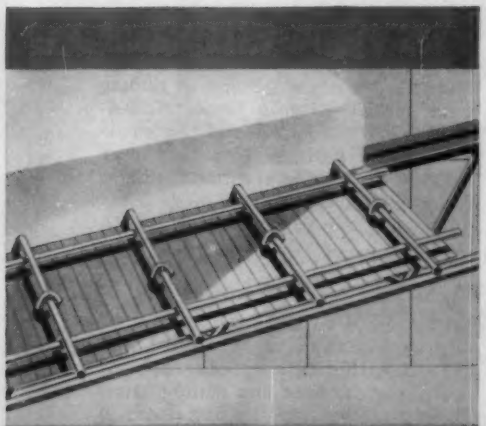
Engineering	Steeltex	Sheet Material
(1) Lateral restraint of top chord of joists	Yes	Not assured
(2) Positive reinforcement	Yes	No
(3) Galvanized	Yes	Extra Charge
(4) Continuous reinforcement	Yes	Only by adding mesh
Cost		
(5) Packaging	No charge	Extra bundling and packing charges
(6) Accessories	No charge	Extra clip and washer charges
(7) Lap	Side lap only	Side and end lap
(8) Additional reinforcing	None required	Additional mesh, 10 to 4 gage
(9) Additional reinforcement placing cost	None	Yes
Contractor		
(10) Material	One roll size spans different joist spacings	Many sheet sizes
(11) Weight handling	36# per 100 sq. ft.	⅜ HyRib Pl 44# ¾ HyRib Pl 60# Corrugated 76# Corrugated Galv. 84#
(12) Faster coverage	Rolls 4 x 125 ft.	Sheets 25 to 28½ inches 6 ft. to 16 ft. 3 inches

Steeltex is easily unrolled by one man. Steeltex weighs only 36 pounds per 100 square feet yet is strong enough to support heavy slabs. Steeltex saves precious construction dollars by permitting on-the-job changes at no extra cost. Steeltex has only a side lap for joining sections together. Clips are furnished free. Sheet material requires side and end laps plus additional reinforcing mesh, 10 to 4 gage. Steeltex needs no additional reinforcing.

Steeltex gives freedom of design. Steeltex, cut and bent easily and quickly here at Ecorse School in Michigan, covers a depressed sanitation facilities area in minutes. Steeltex provides continuous reinforcement. So does sheet material—but only after additional mesh is installed. Yes, Steeltex comes galvanized at no additional cost. There's an extra charge for galvanized sheet material.



Free accessories. Workman at Purdue University's new married student quarters uses clips furnished free to attach Steeltex to steel joists. Steeltex wire mesh reinforcing carries its waterproofed form right on its back and is specially designed for joist construction. Steeltex speeds work, cuts costs, improves quality of construction.



Next time you specify or use a centering material remember these facts. Steeltex, which carries its waterproofed form right on its back, saves time and money—improves quality of construction.

Put Steeltex' advantages to work for you as thousands of others have. Call your nearest Pittsburgh District sales office today. You'll be glad you did.

▶ **See Sweets Catalog Section 2-B**

Steeltex®

Pittsburgh Steel Products

a division of Pittsburgh Steel Company

Grant Building • Pittsburgh 30, Pa.

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"Just as you said we would, we've found that good ventilation definitely improves employee efficiency and morale. It's turned out to be as important as correct lighting, safety devices and cleanliness."

You, as an architect, are of course completely aware of all the benefits of good ventilation. But do you know the many advantages designed into every style of Swartwout Ventilation equipment?

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For help in preparing specifications, see Sweet's Architectural File or send for your copy of the complete Swartwout Catalog today.

The Swartwout Co.
Ventilation Engineering
18639 Euclid Avenue Cleveland 12, Ohio

Office Literature

Proper Use of Concrete Admixtures
Twenty-page handbook discusses selection of proper admixtures, concrete uniformity, quality control, and evaluation of field tests; summarizes characteristics of *Sika* admixtures; and gives guide specifications. *Sika Chemical Corp., Passaic, N. J.**

Lighting Fixtures
. . . and Lighting Systems (A.I.A. 31-F-2) Condensed catalog describes complete line of Sylvania lighting fixtures and lighting systems, with special emphasis on design advantages and construction-operational characteristics. 8 pp. *Sylvania Lighting Products Div., 48th St., Wheeling, W. Va.**

Resolite Daylighting Products
(A.I.A. 26-A-9) Contains general information, specifications, architectural and engineering details, suggested applications, and other information on the complete *Resolite* line of fiberglass-reinforced plastic panels. 22 pp. *Resolite Corp., Zelienople, Pa.**

High Velocity Systems
Catalog TA-100 contains complete engineering data on 19 different types of *Thermotank-Agitair* high velocity units. Dimension and performance tables for each type are included, as are dimension drawings, and illustrations covering duct design, system layouts and installations. 52 pp. *Air Devices Inc., 185 Madison Ave., New York 16, N. Y.*

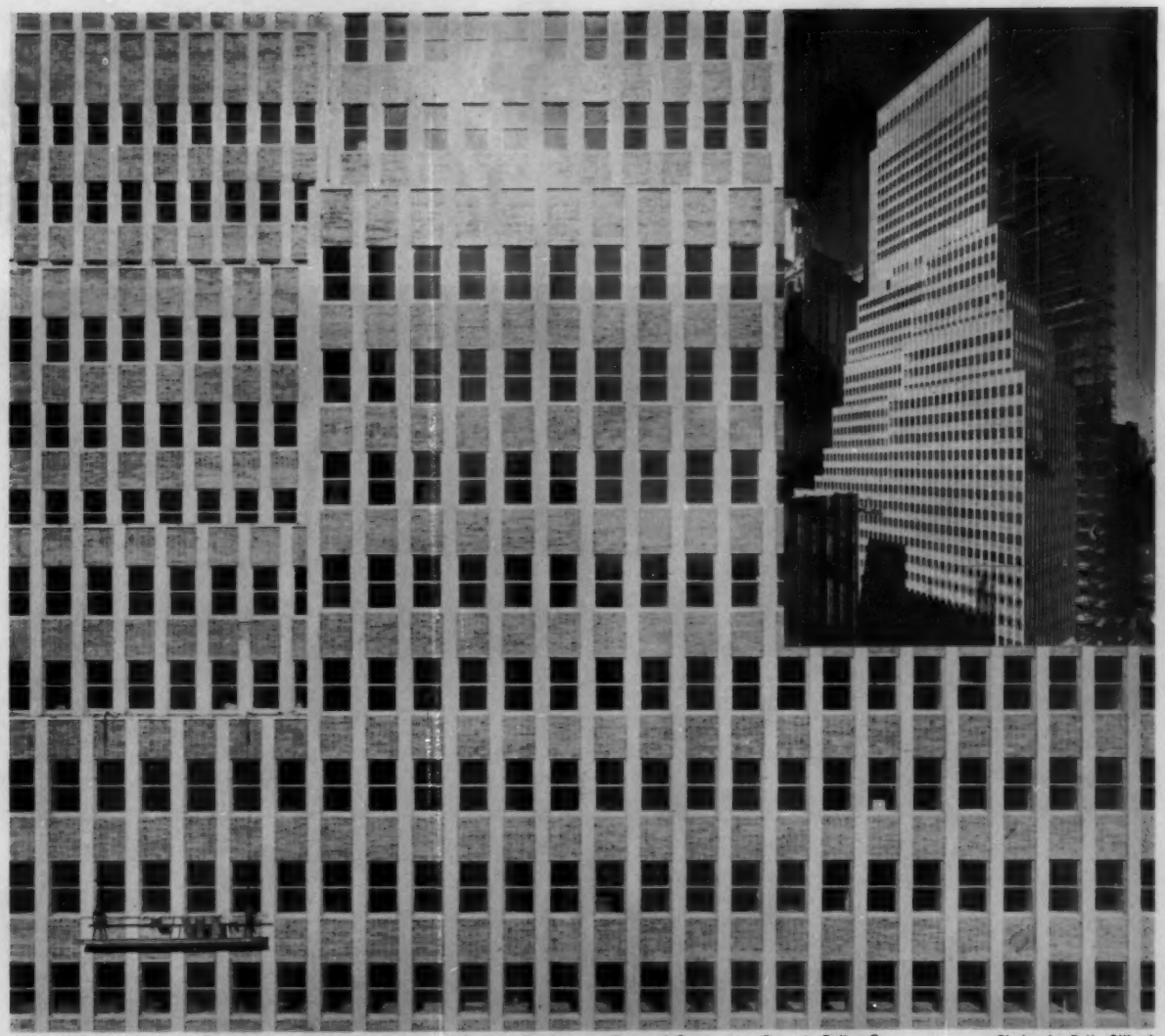
Four New Systems of Food Service
(A.I.A. 35-C-13) Describes and illustrates four new systems of remote food service—*Stor-A-Teria, Add-A-Teria, Port-A-Teria* and *Speed-A-Teria*—and outlines how they may be used to provide feeding facilities for groups varying from 50 to 5000. 46 pp. *Lincoln Mfg. Co. Inc., P. O. Box 2313, Fort Wayne, Ind.*

Light, Bright and Beautiful . . .
(A.I.A. 35-H-6) Outlines features of new aluminum movable interior wall system, with detailed photographs of posts, panels, base and ceiling trim, glazing frames and floating doors. 6 pp. *E. F. Hauserman Co., 7516 Grant Ave., Cleveland, Ohio**

Literature Requested
Brigham and Eldredge, Architects, One Acorn St., Boston 8, Mass.

**Additional product information in Sweet's Architectural File, 1958*

More literature on page 312



111 WEST 40th St., N. Y. C. Architects: Kahn & Jacobs and Sydney Goldstone General Contractor: Geo. A. Fuller Co. Photos by Felix Gilbert

WINDOWS...and also what's behind them!

OUTSIDE... Aluminum single-hung windows with special aluminum exterior trim and steel self-closing lot line windows with matching steel trim; all fitted with Unique Sash Balances to insure faultless operation.

INSIDE... Air-conditioning enclosures, interior steel pier facings between windows and steel partition fillers.

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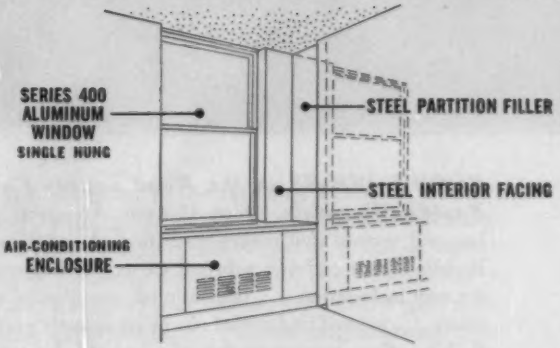

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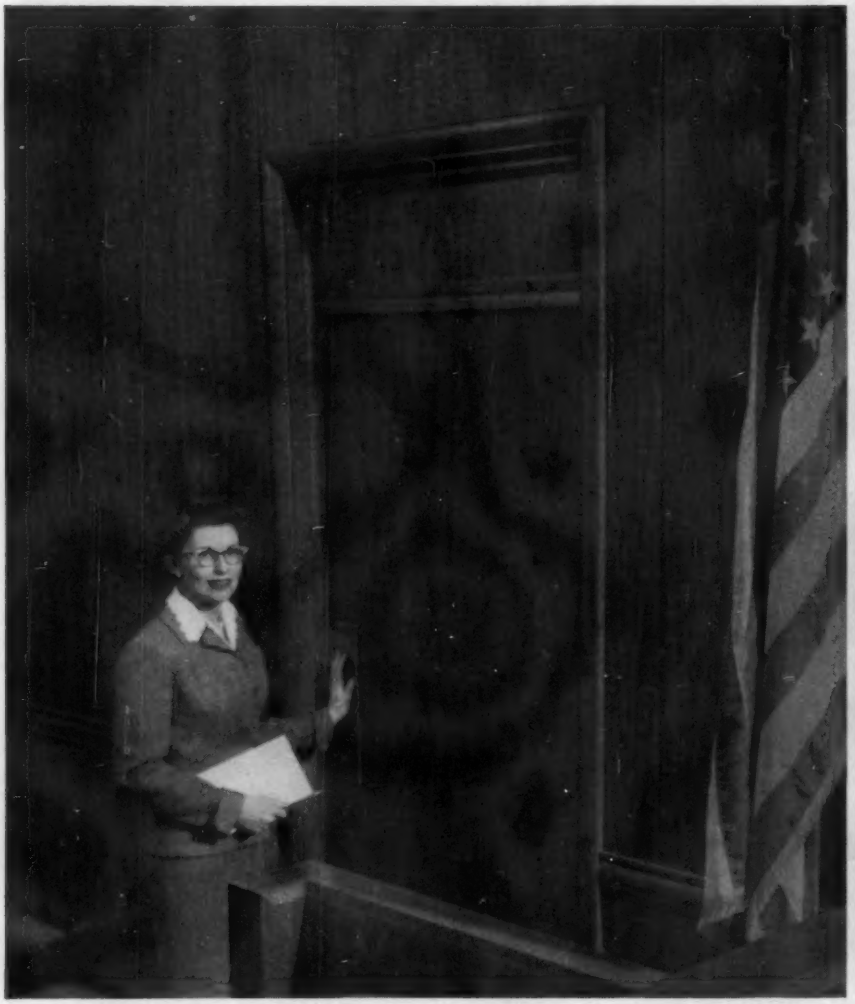

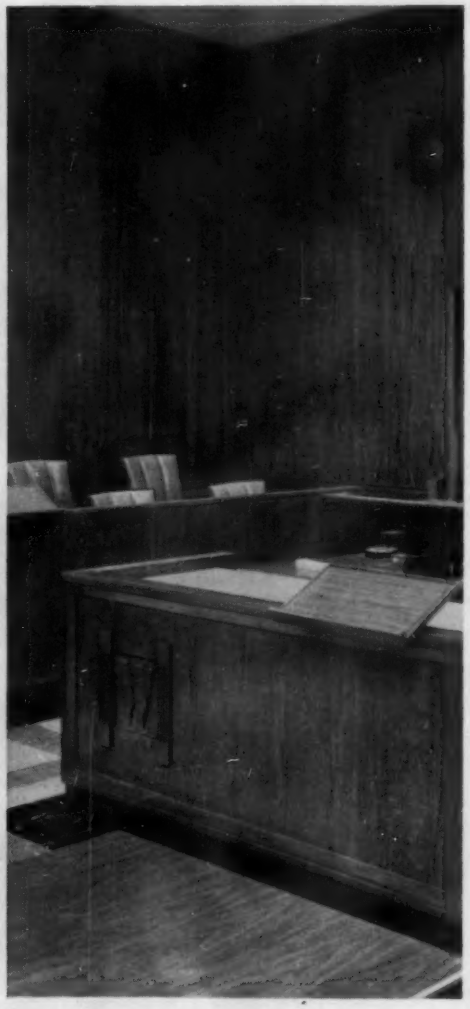

RODDIS DOORS in the Wood County Courthouse, Wisconsin Rapids, Wisconsin (Donn Hougen, Architect) display the rich graining and texture that makes them first choice of many leading architects. Roddis Doors come in a broad variety of imported and domestic woods for any installation . . . institutional, commercial or home. Specify *in the white . . . primed and sealed . . .* or *completely prefinished* to your sample. Roddis offers one source for all your wood door needs—solid and B or C-label fire doors, guaranteed for life; hollow core and X-ray doors.

RODDIS HARDWOOD PANELING lends richness and dignity to the main courtroom in the Wood County Courthouse. To achieve this striking effect, beautiful walnut veneers were selected and matched by Roddis craftsmen. Other Roddis paneling in this in-

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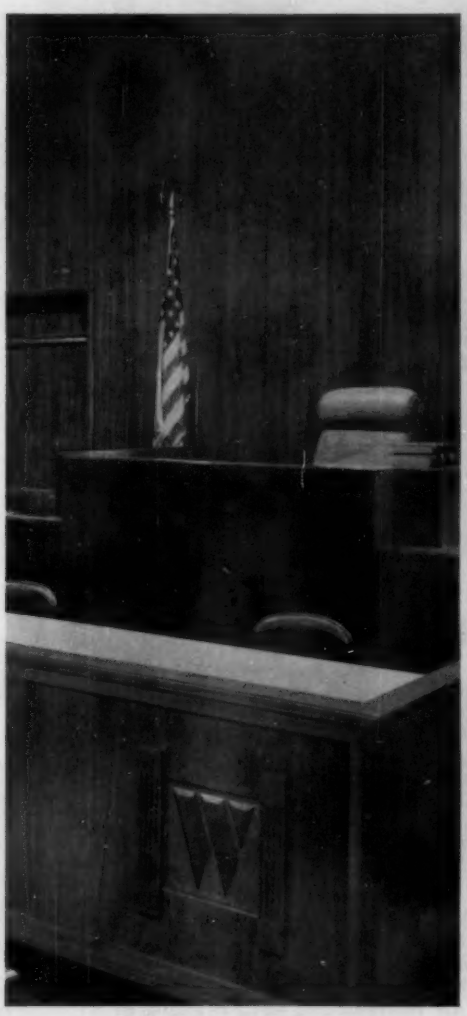

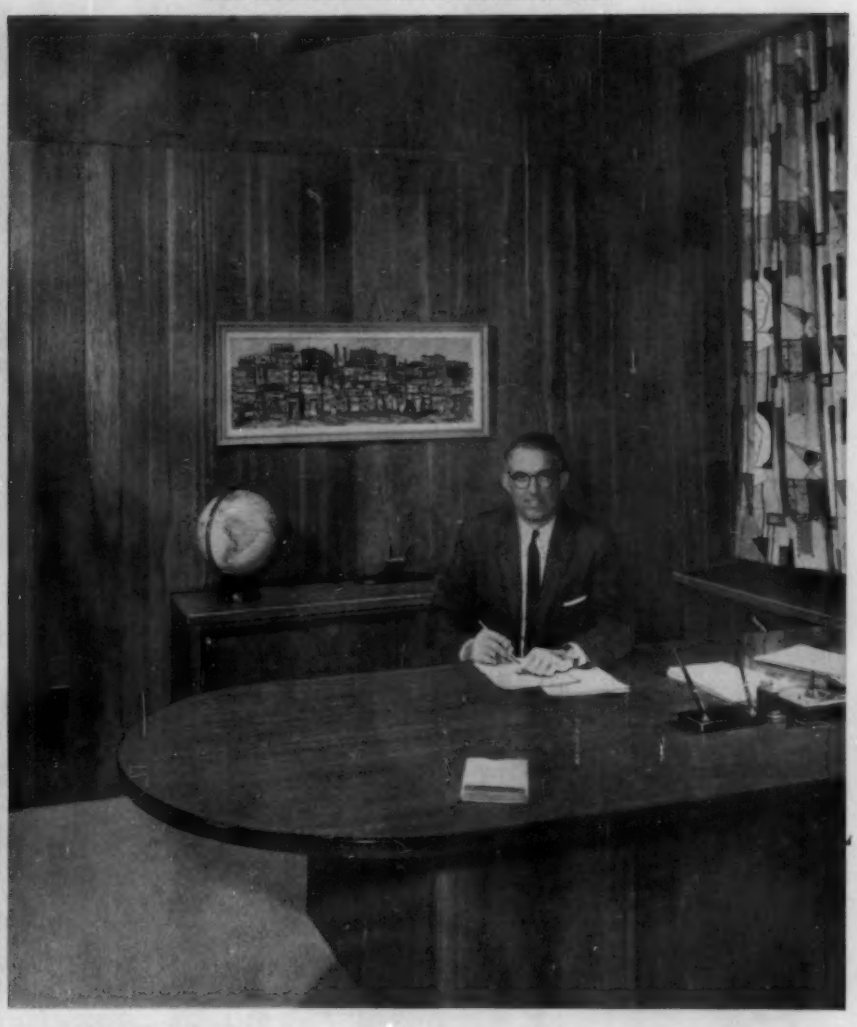

stallation includes Aspen, Oak and Birdseye Maple. Let Roddis provide architectural hardwood paneling to enhance your designs. From your specifications we will create hardwood panels in any special size . . . beautifully veneered in the wood of your choice.

RODDIS CRAFTWALL paneling in the office of Elmer L. Winter, President, Manpower, Inc., gives an air of warmth and efficiency. Craftwall is the perfect background—in offices, public buildings or private homes. There are nine handsome woods: *Elm, Birch (2 tones), Cherry, Maple, Oak, Knotty Pine, Mahogany and Walnut.* Each with a special finish that shrugs off scuffs, stains and dirt . . . retains original beauty. The ¼" panels come in modular sizes—fire-retardant treated, if desired. Craftwall is guaranteed, in writing, for the life of the installation.

FOR COMPLETE SPECIFICATIONS, SEE *SWEET'S ARCHITECTURAL FILE*, OR WRITE

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When power's off . . .

this electrical "appliance" protects home and family

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When highline power is off . . . for any reason . . . an Onan Emergency Plant supplies regular A.C. electricity for lights, refrigerator, freezer, furnace, water pump, electric stove . . . all other appliances and equipment. To protect the home even when occupants are not there, the plant can be equipped to start automatically when power is interrupted and stop when restored.

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Office Literature

Photodrawings

Twelve page illustrated booklet discusses two different methods of preparing "photodrawings" to convey engineering drawing information in easy-to-visualize form. Included are sections on necessary materials and equipment, making the negative, making the master photodrawing, and methods of reproduction. *Sales Service Division, Eastman Kodak Co., Rochester, N. Y.*

Specification Data

. . . for Soap-Dispensing Equipment provides complete detailed information—including descriptions, dimensions, installation instructions and photographs—on soap dispensers for all types of buildings. 16 pp. *Bobrick Dispensers, Inc., Dept. AR, 1214 Nostrand Ave., Brooklyn 25, N. Y.**

Mercury Lamps and Transformers

Offers a comprehensive source of information on the design and operating characteristics of mercury lamps and the transformers used with them. 8 pp. *Large Lamp Dept., General Electric Co., Nela Park, Cleveland 12, Ohio*

**Additional product information in Sweet's Architectural File, 1958*

Motel Air Conditioning

continued from page 238

Some fan coil units have space for 2-in. filters and thus can accommodate both a 1-in. dust filter and a 1-in. activated charcoal filter which can be regenerated.

Because the rooms may have wall to wall carpeting and bedding may be changed or re-made daily, a considerable amount of dust and lint will be evolved in the space. No induction unit should ever be used without a lint screen or filter.

Air recirculating units drawing in air close to the floor need better filtering provisions at the unit than those suspended from the ceiling.

Ventilation Air

GENERAL COMMENTS: Regardless of the particular type of system used, if possible it should be one that gives a balanced air supply and exhaust within each unit. This is important not only from the standpoint of odor control but also room relative humidity limitation during the air conditioning season, particularly so in a humid climate.

continued on page 314

Ballroom, Hotel Andrew Johnson, Knoxville, Tennessee

New dual sound-retardant Foldoor separates sounds and space –adds availability

Here is the most sound-proof flexible room divider ever perfected—an exclusive Holcomb & Hoke development.

With the new Holcomb & Hoke dual sound-retardant FOLDOOR a hotel can schedule two parties in a single ball room, a church can hold a Boy Scout meeting and an adult Bible Class—or a mortuary can book two funerals at once. This dual usage can mean important savings, too, for schools, hospitals and other institutions. The added availability of quiet space opens up untold opportunities for increased revenue or decreased investment in meeting room areas.

For complete details use the handy coupon at the right, or call your nearest FOLDOOR distributor—listed under "Doors" in the yellow pages.

In Canada: FOLDOOR of CANADA, Montreal, 26, Quebec

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FOLDOOR
FOLDING PARTITIONS AND DOORS

HOLCOMB & HOKE MFG. CO., INC.
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Indianapolis, Indiana

Please send details on your new Dual Sound-Retardant FOLDOOR

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COMPANY_____

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ZONE_____ STATE_____

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NOW AVAILABLE IN SIX USEFUL COLORS FOR ROOFS AND SIDEWALLS

Robertson Color Galbestos has the greatest resistance to weather and corrosion of any protected steel roofing or siding obtainable anywhere. This position of broad superiority is made possible by a unique manufacturing process exclusive with H. H. Robertson Company.

First, the steel sheet is pickled . . . then given a coating of molten zinc. Asbestos felt is then pressed on so that as the molten metal hardens in cooling it grips the felt fibers in absolute bond. The asbestos is then impregnated with a special asphaltic compound and, finally, given a tough weatherproof coating. Galbestos can be furnished flat or in the 3 well-known corrugations: Standard, Mansard, and V-Beam. The resultant material is so durable, it may be sheared, bent, rolled, crimped and riveted in the field as easily as ordinary unprotected steel. It will withstand the greatest possible extremes in weather temperatures without deterioration, and will actually retard fire better than naked steel. For an industrial roofing or siding that requires no maintenance under the most severe corrosive conditions, specify Color Galbestos.

Long Service Life. Color Galbestos will give longer maintenance-free service under the most severe weather and man-made corrosive conditions. Even salt air cannot penetrate its tough coatings to destroy the steel core.

Not Fragile. Color Galbestos' strong steel core sheet guarantees against breakage—during shipment or during erection.

Resists Climatic Extremes. Color Galbestos is not subject to damage either by tropic or frigid temperatures. Its coatings will not run under broiling sun or crack or spall in sub-zero weather.

Goes Up Fast. The exclusive Robertson Top-Speed method of attaching Color Galbestos to structural steel speeds up erection for quicker occupancy.

Resists Flame. Leading testing laboratories have made exhaustive tests on the fire resistance of Galbestos and have published the results. Copies of these reports are available for study.

Robertson *Color*

Galbestos

a product of **H. H. Robertson Company**

2404 Farmers Bank Building • Pittsburgh 22, Pa.

In Canada: Robertson-Irwin Ltd., Hamilton, Ontario

In England: Robertson Thain Ltd., Ellesmere Port, Cheshire

Motel Air Conditioning

continued from page 312

In any case if windows are left open or infiltration is excessive and continuous it will upset the air conditioning completely. Showers can have the same effect temporarily.

Fortunately, window air conditioning units and fan coil units will usually have excess moisture removal capacity so that, within limits, satisfactory humidity will be maintained even though the proportion of load due to moisture is high.

Provisions for Ventilation Air Supply and Their Effect on Cooling Season Operation

1. Outside Air Supply by:

a. Infiltration. Poor to fair except where there is no mechanical exhaust or it is intermittent (e.g., toilet exhaust fan on light switch). Otherwise too much humid air will be pulled in.

b. Outside Air Intake at Room A.C. Unit. Fair, with or without mechanical exhaust.

c. Ventilation Air Supply to Room A.C. Unit.

(1) Not pre-cooled. Fair, with or without mechanical exhaust.

(2) Pre-cooled. Excellent, with or without mechanical exhaust. Note: Air supply to unit should be shut off when room is not in use to save on refrigeration.

2. Ventilation Air Exhaust or Relief by:

a. Exfiltration through windows or doors. Poor but may be satisfactory if there is no smoking and hot showers are not taken. (Outside air intake to unit required.)

b. Individual toilet exhaust fan operated off light switch. Fair to excellent except if supply is by infiltration and fan is on too long.

c. Central toilet exhaust system. Fair to excellent except if supply is by infiltration and outside air has too much moisture.

Building Code Limitations

These will pertain mainly to the following:

1. Toilet exhaust ventilation. (Fire Underwriters do not allow make-up for toilet exhaust to be drawn from corridors.)

2. Use of recirculated air in air systems.

3. Use of fire dampers and other devices in duct systems and other design limitations.

4. Use of direct expansion refrigerant for cooling systems.

5. Use of direct oil or gas fired heating-cooling systems.

(Top) KLM Office, Raymond & Rado; (Center) Williamsburg Motor House, Tom Lee, Inc.; (Bottom) Foyer, Intramural, Inc.; (Right) McCullough Motors Office, Paul Laszlo

Design Latitude From the quarry, the forest, the brown earth itself, Micarta® has conjured a million faces. Cool whorls of marble . . . earth shot with seeds of light . . . mahogany or walnut, massive in dignity. Shape a mural from it as Beryl Austrian did. Style an office with the geometric precision of Laszlo or Rado. Warm a cafeteria with walnut in the Tom Lee manner. You will find that Micarta obliges your art, blends form, color and function with ease. Best of all, Micarta *lasts* as long as the buildings it beautifies. No painting, no waxing, *ever*—just keep it clean with a damp cloth. Specify Micarta for your next job, on horizontal or vertical surfaces. You have 84 exclusive colors, patterns and natural wood *Trugrains*® to choose from.

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2 WAY safe control for double acting interior doors

Push the door either way—the return to closed position is gentle and quiet, making two-way door traffic safer and more rapid. RIXSON Duo-checks are especially desirable for doors where busy people pass through with loaded arms . . . carrying trays, pushing wheeled carts, etc. Where specified, a hold-open is built in that automatically holds the door when pushed open to 90° on either the right or left swing or both. A gentle push or pull releases the hold-open.

completely invisible . . . RIXSON Duo-checks are concealed in the rigid floor. The door is pivotal hung with no unsightly arm, mechanism or hinges exposed to gather dust or dirt.

ideal for *hospital doors leading to utility and supply rooms; cafeteria and kitchen doors leading to dining areas; all double acting light interior doors. Write for descriptive literature and templates.*

THE OSCAR C. RIXSON CO.

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43 racine road • rexdale, ontario

TWO EXTRA CLASSROOMS AT NO EXTRA COST!

Stran-Steel Joists Effect Important Savings

Over two miles of Stran-Steel nailable joists were recently used in building the Devine Elementary School at Devine, Texas. They contributed to construction economies that, according to the architect, Adams and Adams, resulted in two extra classrooms at no extra cost.

Construction of the Devine school demonstrates again that Stran-Steel nailable joists simplify the application of collateral materials. In this case, roofing was nailed directly to the joists. Architects have also found that Stran-Steel joists and beams fit closely, reducing ceiling depth, and eliminating need for boxed beams or dropped ceilings.

For permanent and economical framing that is lightweight, firesafe and nailable, specify Stran-Steel joists. Better yet, find out about the *complete* Stran-Steel building system that gives you low-cost flat ceilings and nailable steel framing in any type of commercial or industrial construction. Mail the coupon for information or contact your nearest Stran-Steel dealer. He's listed in the Yellow Pages under *Steel*.

Dept. 23-24
STRAN-STEEL CORPORATION
Detroit 29, Michigan • Division of
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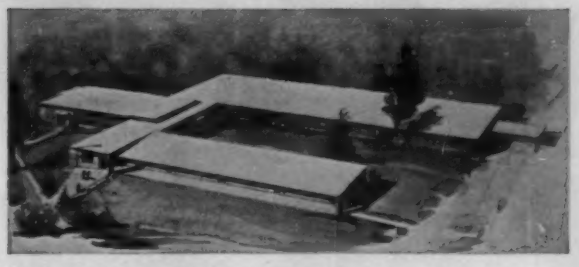

Devine Elementary School, Devine, Texas
Architect: Adams & Adams, A.I.A., San Antonio, Texas
General Contractor: William Matera, San Antonio, Texas

Stran-Steel Architectural Products Mean Construction Savings For You

For More Information, Use This Coupon

Stran-Steel Corporation, Dept. 23-24
Detroit 29, Michigan

☐ Please send me the Structural Systems Catalog.
☐ Please have your representative contact me.

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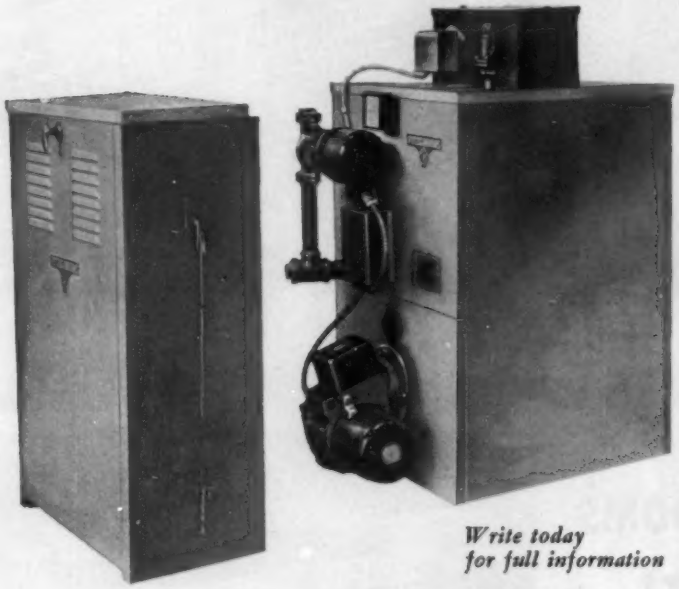
Fitzgibbons

NEW 7700 SERIES

BOILER-BURNER UNIT



Write today for full information

The new 7700 Series is a worthy successor to the famous 770 Series in oil fired, forced hot water heating systems.

NEW PRICES. Economies resulting from improved design and new manufacturing methods enable Fitzgibbons to offer a completely superior product at a competitive price.

NEW SIZES, now totaling FOUR in number, provide greater sales opportunity in a broader range of small building projects.

NEW LOOK with an attractive green and gray square jacket which may be easily and quickly converted to a fully enclosed model through the simple application of a jacket extension.

NEW FEATURES include low voltage thermostat; greater range in tankless domestic hot water coil capacities; improved packaging and easier handling.

Fitzgibbons
Boiler Company, Inc.
Sales and Executive Office: 101 Park Ave., New York 17, N. Y.
Field Sales Office and Plant: Oswego, New York.
DEPT. 10

FB-128

The Record Reports

On the Calendar

April

14-17 Design Engineering Show—International Amphitheater, Chicago

15-17 Sixth Annual Welding Show, sponsored by the American Welding Society—Kiel Auditorium, St. Louis

17-18 Tenth Annual National Engineering Conference of the American Institute of Steel Construction—Chase-Park Plaza Hotel, St. Louis

17-19 South Atlantic A.I.A. Regional Conference—Municipal Auditorium, Sarasota, Fla.

18-19 Great Lakes A.I.A. Regional Conference—Morris Inn, Notre Dame, Ind.

18-19 Middle Atlantic A.I.A. Regional Conference—Sheraton-Belvedere Hotel, Baltimore

19-27 Third Annual International Home Show—The Coliseum, New York City

21-23 Seventh Annual Meeting, Building Research Institute—Shoreham Hotel, Washington, D. C.

24-27 Sixteenth Annual Conference of the National Committee on Art Education—Museum of Modern Art, New York City

27ff Twentieth Annual Convention, National Association of Architectural Metal Manufacturers; through May 2—Shamrock-Hilton Hotel, Houston

28ff Annual Meeting, A.I.A. Board of Directors—Washington D. C.

May

2 Fifth Annual Conference for Engineers and Architects sponsored by the College of Engineering of Ohio State University—University campus, Columbus

5-7 Annual Meeting, Air-Conditioning and Refrigeration Institute—The Homestead, Hot Springs, Va.

5-9 Convention and Exposition, National Restaurant Association—Navy Pier, Chicago

7-17 Second Annual U. S. World Trade Fair—The Coliseum, New York City

9-10 78th Annual Convention, Michigan Engineering Society—Civic Auditorium, Lansing, Mich.

Carlton Steiner, Architect

Phil Palmer, Photo

CRA MEMBER MILLS:

Georgia-Pacific Corporation
(Hammond-California Redwood Division)

Holmes Eureka Lumber Company
Redwood Sales Co., Eastern Distributor

The Pacific Lumber Company

The Pacific Coast Company

Simpson Redwood Company

Union Lumber Company

Willits Redwood Products Company
Hobbs-Wall Lumber Co., Sales Agent

Arcata Redwood Company

CRA CERTIFIED KILN DRIED CRA
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THE REDWOOD MOTEL invites the passing motorist...
its warmth of color and texture promises a restful home away from home.
Motels of redwood from coast to coast beckon the traveler... motels built
with CRA Certified Kiln Dried redwood... graded, milled
and seasoned by the member mills of the

CALIFORNIA REDWOOD ASSOCIATION • 576 SACRAMENTO STREET • SAN FRANCISCO 11, CALIF.

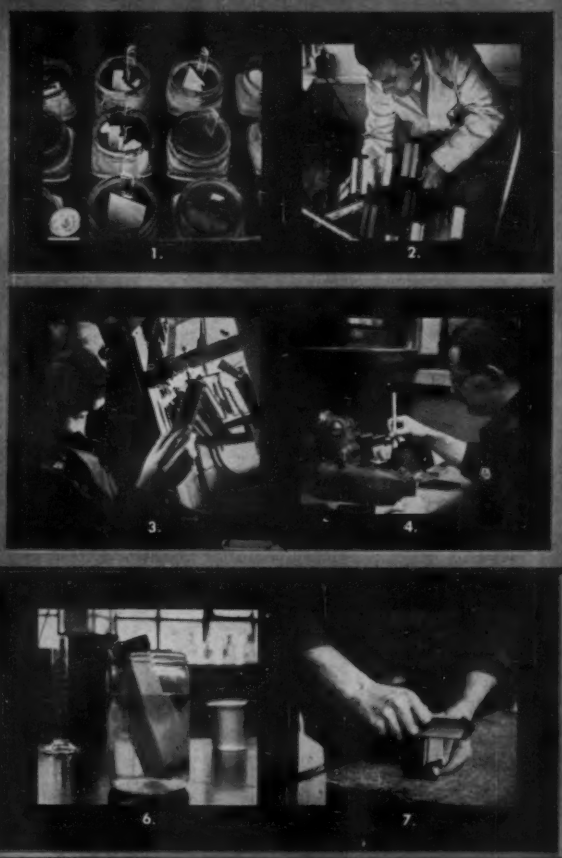
TRUSCON STEEL WINDOWS WITH

7 TOUGH TESTS PROVE SUPERCOAT PERFORMANCE

1. SOAK TEST simulates field condition of windows standing overnight in a pool of water before installation.
2. SALT SPRAY TEST parallels coastal area atmospheric conditions.
3. WEATHEROMETER TEST duplicates the field condition of exposure to strong sunlight.
4. ABRASION TEST simulates abrasive materials rubbing against frames during installation, and abrasives windblown after installation.
5. HUMIDITY TEST parallels field conditions of humidity inside and outside.
6. ALKALI TEST duplicates field conditions of washing windows with ammonia, rain dripping off mortar, plaster, etc.
7. MAR PROOFNESS TEST simulates field condition of sliding frames across one another in handling.

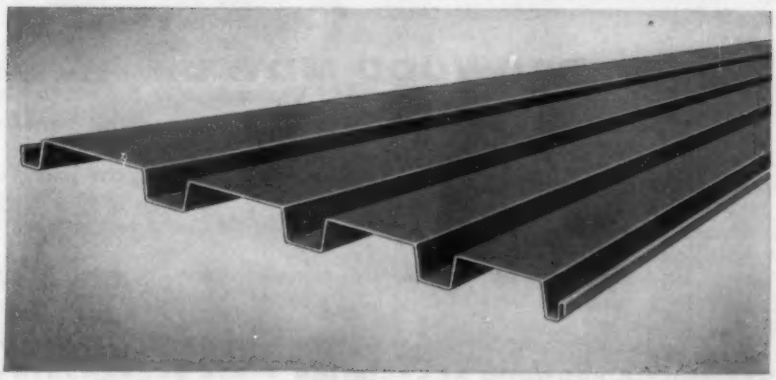
SUPERCOAT PASSED THEM ALL!

5.



1. 2. 3. 4. 6. 7.

NOW! Truscon Ferrobord® Steel Roofdeck is a full two feet wide. New, wider Ferrobord available in lengths up to 32 feet, 6 inches. It roofs large areas quickly. Straight lay means that several crews can roof without delay. All work is done from above—Ferrobord is quickly welded to top chords of joists or purlins. It is light, strong. Fire-resistant. Available now. Send coupons for specs.



NEW SUPERCOAT FINISH

Install without painting! Stave off maintenance painting!

Now, you can have the solid strength of steel windows and avoid painting costs, too. New Truscon Supercoat Process is factory-applied to eliminate all field painting . . . both at installation and during the years.

This outstanding Truscon development has been thoroughly laboratory-tested—for weather, atmosphere, time, and abuse. It has successfully met each challenge. Read tests at left.

Supercoat is a two-coat baked enamel that originally was developed for water-using appliances in which corrosion must be avoided. This superbly smooth, hard and glossy finish has been improved by the research laboratories of Republic Steel to further withstand exterior exposure.

As a result of this development, there is no need to sacrifice strength and solidity in window sections simply to avoid painting. Supercoat Process can be furnished now on specification in factory shipment on all Truscon Steel Windows for commercial, institutional, and industrial construction. Standard color is a light grey. Six more colors on special order. Send coupon for free Supercoat sample.

REPUBLIC STEEL LOCKERS now Bonderized to lock paint on, lock rust out! Bonderized steel surfaces take and hold a firm grip on enamel. If chipping or scratches occur, underpaint corrosion is confined to a small area. Republic Steel Lockers look better, last longer, even when subject to rough handling in schools, industrial plants. Yet, they cost no more. Send coupon for facts.

REPUBLIC STEEL KITCHENS feature Perma-Finish enamel over Bonderized steel for long-lasting beauty and efficiency. Perma-Finish is tough, pliable, resists damage, stays color-true. In white, yellow, turquoise and pink. Republic Steel Kitchens give you a wide choice of styles, sizes, door and drawer arrangements. Ideal for use in school and industrial kitchens and laboratories. Complete selection in distributor stocks, details in Sweet's File, or send coupon for facts.

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World's Widest Range of Standard Steels and Steel Products

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Please send more information on:
- ☐ Truscon Supercoat Process
- ☐ Truscon Ferrobord Roofdeck
- ☐ Republic Steel Kitchens
- ☐ Republic Steel Lockers

Name_____ Title_____

Company_____

Address_____

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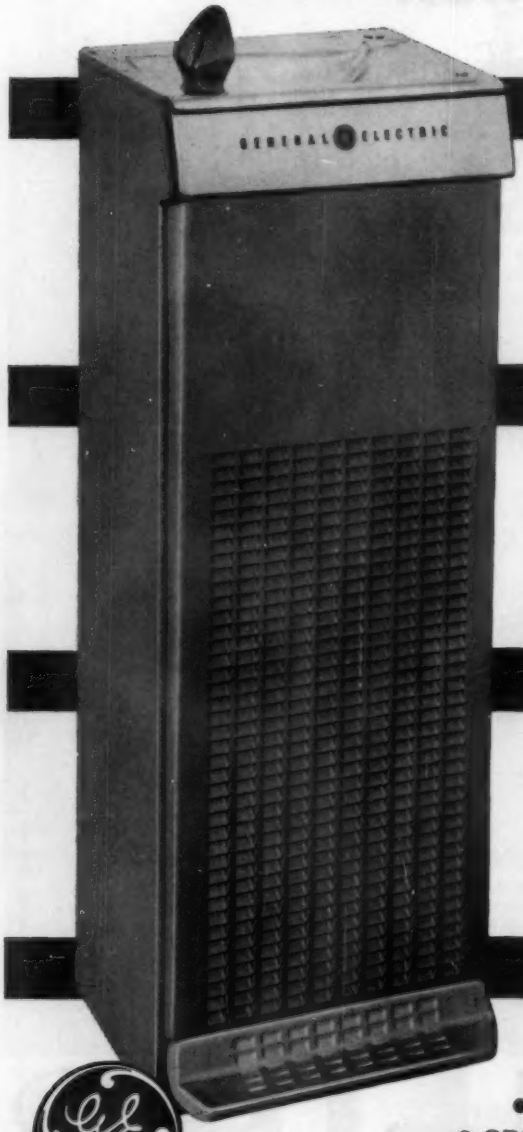
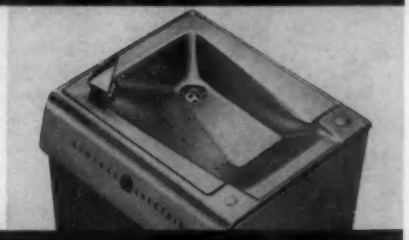
Make sure you get all these features... specify GENERAL ELECTRIC WATER COOLERS



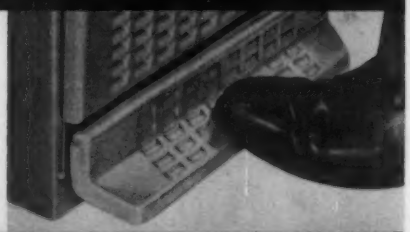
ANTI-SPLASH BASIN

Prevents splashing, spilling, splattering of bubbler stream. Stainless steel—easy to clean.



NO-GROPE PEDAL

Full width design permits water control from any point in front of cooler. Special design prevents scuffed shoes, stubbed toes.

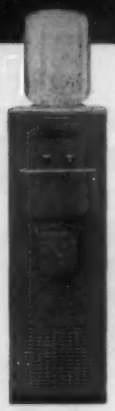


TEMPERATURE DIAL

Just dial the water temperature you like best. Eight different settings offer wide selection.

PLUS

- ADJUSTABLE BUBBLER
- HANDSOME STYLING
- SPACE-SAVING DESIGN
- 5-YEAR PROTECTION PLAN



How many water coolers do you need and where should they be located for best results?

G-E Water Coolers are available in 14 different models with capacities from 2.85 to 21.5 gallons per hour. Call your local G-E Water Cooler dealer or write to General Electric Co., Commercial & Industrial Air Conditioning Department, 5 Lawrence St., Bloomfield, N. J.

Progress Is Our Most Important Product

GENERAL ELECTRIC

ASK ABOUT Hot and Cold Combinations, pressure and bottle types—also refrigerated compartment models.

FREE...a detailed color program to help you sell your plans!

• We'll provide detailed COLOR DYNAMICS recommendations, complete with color chips, in book form. Also included are correct types of coatings for every kind of material and construction; and suggestions for proper preparation of surfaces before painting.

You can give designs and plans you create greater sales appeal by supplementing them with a detailed color program.

• **In practically every level** of industrial and commercial life there is an increasing understanding of the fact that there is more to color than meets the eye. As a result, the drab, bleak and inharmonious color schemes of yesterday are being replaced by functional and attractive color patterns in keeping with modern advancements in equipment and methods.

• **Much of this transformation** of work areas derives from the development and perfection of Pittsburgh COLOR DYNAMICS.® This modern painting system harnesses, in a practical way, the influence of the energy of color upon people.

• **With COLOR DYNAMICS,** it is possible to specify colors in work areas that relieve eye strain, reduce nervous tension and physical fatigue, minimize time-loss hazards, and otherwise improve the efficiency and safeguard the well-being of workers.

• **We'll tailor** a COLOR DYNAMICS program to go with your plans without cost or obligation. Call your nearest Pittsburgh Plate Glass Company branch and arrange to have one of our color consultants see you at your convenience. Or send the coupon below.

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SYMBOL OF SERVICE FOR SEVENTY-FIVE YEARS

75 YEARS 1883–1958

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☐ Please have your representative provide us with further information about Pittsburgh's *Free* COLOR DYNAMICS engineering service for architects.

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SAFE
OUTSIDE WALKING SURFACES

THE sidewalk around the First Federal Savings and Loan Association in Boston slopes sharply in several directions. To provide walking safety in wet weather and dry, plus appearance in keeping with the colorful new building, they used ALUNDUM Aggregate in latex terrazzo.

For years, teen-agers hurrying to classes in the High School of Commerce (Worcester) have had non-slip protection in wet weather or dry from ALUNDUM (C.F.) Aggregate in the cement sidewalk.

Solid Grain Sidewalk Abrasives: Some architects prefer a sprinkling of loose abrasive grain of the solid type wood-floated into the surface of the cement, though it lacks the high bonding feature of ALUNDUM Aggregate. Available are ALUNDUM (Aluminum Oxide) and CRYSTOLON (Silicon Carbide) grain in a variety of sizes.

NORTON
NON-SLIP FLOORING

NORTON COMPANY
WORCESTER 6, MASS.

ALUNDUM AGGREGATE for Terrazzo and Cement • ALUNDUM STAIR and FLOOR TILE

The Record Reports

9 ff Exhibition of School Architecture, sponsored by the A.I.A.—through June 15—The Octagon, Washington, D. C.

18-21 27th Annual Conference, American Institute of Decorators—Sheraton-Plaza Hotel, Boston

18-22 National Planning Conference, American Society of Planning Officials—Washington, D. C.

19-23 Annual Meeting, National Fire Protection Association—Palmer House, Chicago

25-29 51st Annual Meeting, Air Polution Control Association—Sheraton Hotel, Pittsburgh

June

4 20th Century Design; the first exhibition in this country of an extensive selection of objects from the Museum's design collection—Museum of Modern Art, 11 West 53rd Street, New York City

6-22 Seventh Annual Boston Arts Festival—Public Garden, Boston

9-12 National Conference on Materials Handling, the first to be sponsored by the American Society of Mechanical Engineers since 1949, and Eighth National Materials Handling Exposition—Public Auditorium, Cleveland

9-21 Triennial Meeting, International Organization for Standardization: General Assembly, Council and 15 technical committees—Harrogate, England

10-14 51st Annual Assembly, Royal Architectural Institute of Canada—Queen Elizabeth Hotel, Montreal

16-18 Annual Meeting, American Association of Cost Engineers, in cooperation with Case Institute of Technology—Cleveland

22-27 Annual Meeting, American Society for Testing Materials—Hotel Statler, Boston

22-28 National Convention (second of three in 1958), American Society of Civil Engineers—Portland, Ore.

23-25 Joint Meeting of the American Society of Heating and Air-Conditioning Engineers and the American Society of Refrigerating Engineers—Hotel Leamington, Minneapolis

Sylva-Lume—good lighting with attractive, variable design—strikes up a warm and friendly mood at the central offices of the Hill City Savings & Loan Association, Summit, N. J. Architect: R. O. Peck, Westfield, N. J. Consulting engineers: Nordling-Dean, Inc., Summit.

Sylva-Lume Wall-to-Wall Lighting...

combines arresting, aesthetic design with finest quality of illumination

An aesthetic ceiling design of square modules that glow with soft, diffused light! That's the impression you get when you see Sylvania's new Sylva-Lume lighting system.

A delight for the designer's eye . . . a lasting pleasure for the man who works under it . . . Sylva-Lume wall-to-wall lighting rediscovers the ceiling as a medium of contemporary expression. Its translucent plastic squares have "sculptured" contour, with varying depth and design. Optional incidental color lends splashes of accent and variety to the pattern. Individual designs can be changed quickly and easily when desired.

Sylva-Lume enables you to combine unlimited freedom of design with the finest quality of illumination attainable. Its true shadow-free, glare-free effect is ideal for general and private offices, reception rooms, lobbies, department stores . . . wherever good lighting counts. Ask your Sylvania Fixture Specialist for his "live" demonstration, or write direct for FREE folder of complete information and specification data.

Sylvania Electric Products Inc.
Dept. E20, Lighting Division—Fixtures
One 48th Street
Wheeling, West Virginia

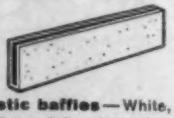
Custom-create over 100,000 different lighting designs using only a few standardized components:

Deep panels • 4 types. In pink, yellow tints, or white.

Shallow panels • 4 types. In same two tints, or white.

Drumhead panels • 8 types. White, pink, yellow . . . in several pleasing combinations.

Perimeter panels — Interesting treatment for borders.



Acoustic baffles—White, yellow or blue—delineate and accent.

SYLVANIA

Fluorescent Lighting Fixtures and Systems

Best fixture value in every price range

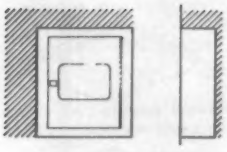
LIGHTING • TELEVISION • RADIO • ELECTRONICS • PHOTOGRAPHY • ATOMIC ENERGY • CHEMISTRY-METALLURGY

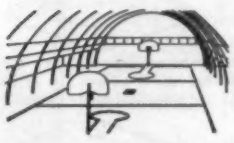
"Greatest improvement in Standpipe Fire Protection in 50 years!"

New... ALLENCO

HOZEGARD CABINETS

UL Listed





- **Save Space**—35% less area, less depth; not limited to walls, may be installed on any plane, even floors*
- **Cut Cost**—save 25%-30% on each unit installed, by eliminating costly pin-type rack and time of loading hose on it
- **Serve Best**—foulproof door-rack swings full 180 laterally *or* vertically; hose "points" faster, reaches further

UL Listed—thoroughly tested; *first* complete fire hose cabinet unit, including equipment, to be 100% Underwriters Listed

**using appropriate framing and solid (no glass) door*

11.2 FIRE EXTINGUISHERS AND CABINETS:

Contractor shall provide and install ~~one~~ full[illegible] extinguishers and cabinets complete, as manufactured by W. D. Allen Manufacturing Co., (Allenco) or approved equal. Extinguishers shall be filled and ready for use.

A. Fire Extinguisher Cabinets: 8 (eight) required, one at each fire alarm station, installed as detailed, unit #285 17" x 27" x 8" cabinet complete with Allenco aluminum door and trim, glazed with single strength glass, and flush fitted flat key cylinder lock.

Fig. 7168
19"x22"x5½" I.D.
Holds 50 or 75-feet
of 1½" linen hose

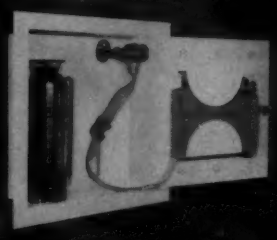


Fig. 7169
26"x27"x8" I.D.

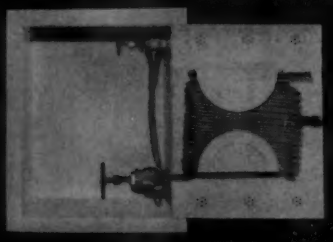


Fig. 7172
24"x30"x8½" I.D.

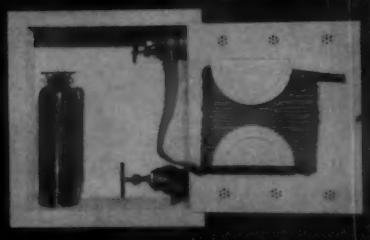


Fig. 7173
27"x30"x8½" I.D.

Each holds up to 100 feet of 1½" linen hose, 50 or 75 feet of Allen-flex hose, or 50 feet of Qua-flex hose, plus choice of extinguishers where shown and Fire Department valve where shown.

Tamper-proof Latch Shield (*optional*) keeps contents safe for emergency, yet breaks clean instantly

Blends Into Any Surface: choice of 3 trims, 2 door styles; finish on the job or by factory to your specs; face-flush vents

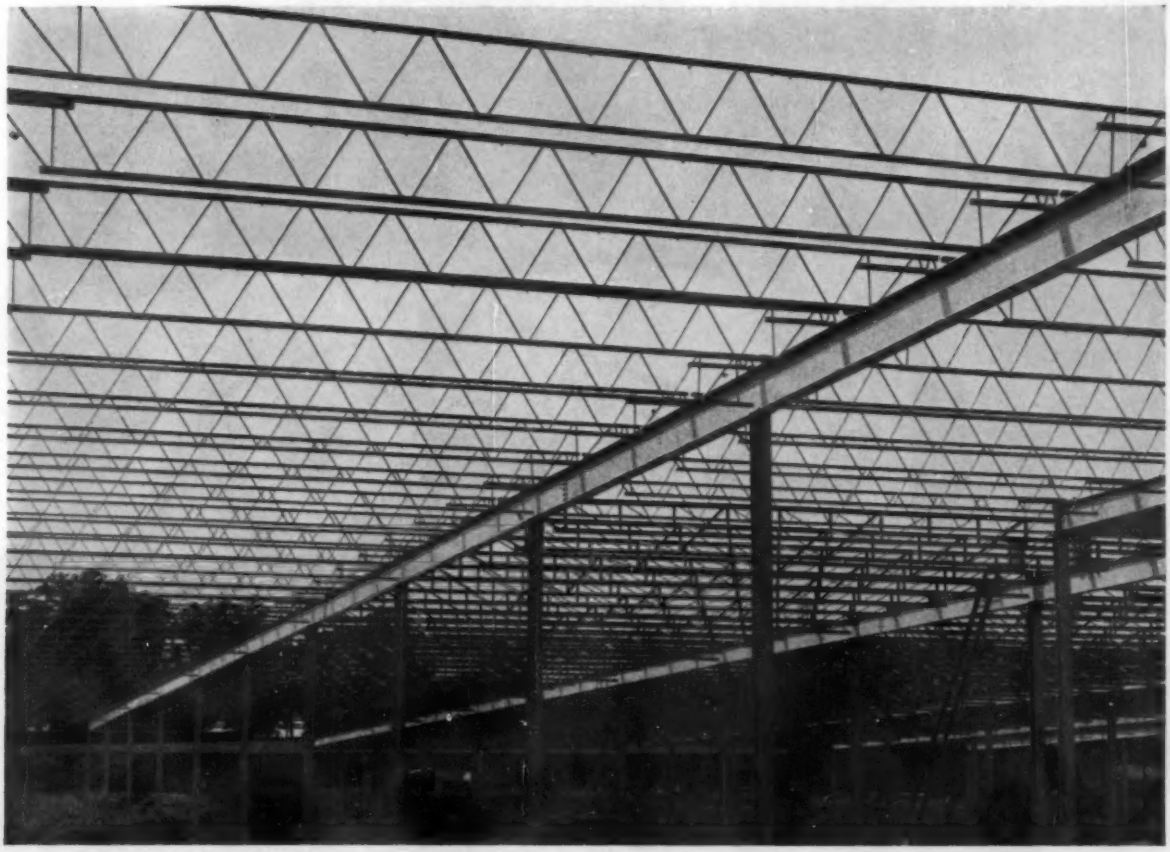
For SELF DEMONSTRATION or DATA phone your ALLENCO Fieldman (listed in Yellow Pages) or write...

ALLENCO

W. D. ALLEN Manufacturing Co.

Room 500 Allenco Bldg. 566 W. Lake St. Chicago 6

Tell us where to send your copy of this handy digest reference (not a catalog) for specifying or installing non-sprinkler fire protection.



LACLEDE STEEL JOISTS ASSURE PLENTY OF UNOBSTRUCTED FLOOR SPACE FOR NEW DEPARTMENT STORE WAREHOUSE

To help keep merchandise flowing without excessive handling costs, this steel-framed department store warehouse has plenty of clear floor space . . . unobstructed by unnecessary center-posts.

Open web steel joists by Laclede eliminate much combustible material, increasing the building's safety from fire. Maintenance costs, too, are reduced because durable Laclede steel joists were finished with paint coat applied in the shop before erection.

Erection of Laclede steel joists is swift and efficient. Expensive field fitting is eliminated because joists are prefabricated and delivered to the job ready for immediate placement.

Laclede steel joists' open web construction insures strength and minimizes dead weight. Laclede Standard open web steel joists are designed and manufactured in strict conformity to the sound engineering standards adopted and approved by the Steel Joist Institute.

Specify LACLEDE for these construction steels

- Multi-rib reinforcing bars
- Welded wire fabric
- Form and tie wire
- Spirals
- Corrugated steel centering
- Electrical weld gas tubing
- Conduit
- Steel pipe

Owner: Stix, Baer & Fuller, St. Louis, Missouri
General Contractor: Millstone Construction, Incorporated, St. Louis
Engineer-Architect: Abbott, Merkt and Company, New York

STEEL JOIST MEMBER SJI INSTITUTE

LACLEDE

LACLEDE STEEL COMPANY

SAINT LOUIS, MISSOURI ◆ Producers of Steel for Industry and Construction

UNIQUE DAMPER IN CONNOR KNO-DRAFT

HIGH VELOCITY VALVE ATTENUATOR

Assures COMPLETE CLOSE-OFF

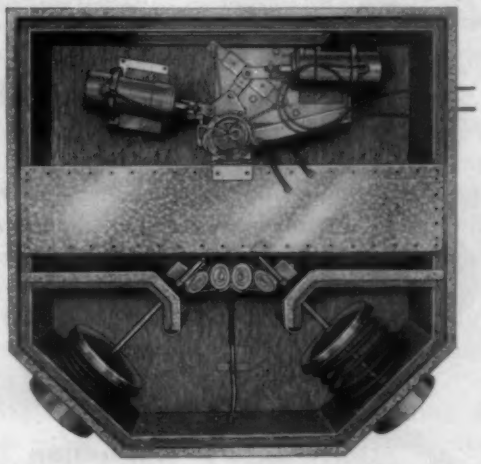
NEW series "45"

PATENTED HELICAL NEOPRENE SPRING DAMPER throttles high velocity air by governing flow of air from supply duct into mixing chamber. Air passes from duct into mixing chamber (arrows) through spaces between spring's coils. Control mechanism compresses spring, throttling or completely closing off air flow. Aging-resistant neoprene tubing forms soft-walled venturi section when throttling . . . air-tight seal when closed.

The CONNOR KNO-DRAFT "series 45" Valve Attenuator offers important new advantages for dual duct installation.

The exclusive patented HELICAL NEOPRENE COATED SPRING DAMPER positively assures complete close-off . . . full cooling and heating realized because damper shuts with less than 2% leakage. Damper action is linear, and operation is extremely quiet because high velocity air is throttled through soft-walled venturis and discharged radially.

This unique damper and the precisely engineered combination of other important features makes these High Velocity Valve Attenuators matchless for constant, quiet, controlled performance.



- **UNITIZED LINKAGE MECHANISM**—reduces friction, eliminates control lag, insures precise temperature regulation, permits easy servicing.
- **CONSTANT VOLUME CONTROL**—Manual volume control also available.
- **CHOICE OF SOUND BAFFLES**—Sinuous or Flat Plate.

CONNOR... for Constant Comfort Conditions

Write for complete information.

CONNOR ENGINEERING CORPORATION

kno·draft®

high velocity air diffusers

CONNOR ENGINEERING CORPORATION

81 SHELTER ROCK ROAD • DANBURY • CONNECTICUT

Executone gives you **4-way service** for sound and intercom systems!

We provide not only wiring plans, shop drawings, specifications and costs, but with our nation-wide organization of exclusive distributors we also give your clients on-premise maintenance of equipment and instruct their personnel in its proper use. If you have a job on your boards that should utilize intercom or sound, you should be familiar with these four important Executone services;

Not only this...

1 Consultation Service

Executone's Field Engineers will assist you in determining your clients' communication needs... recommend the system designed for the job... provide you with a professional consultation service.

2 Installation and Supervision

Each local Executone distributor is prepared to take full responsibility for the final and satisfactory operation of the system, whether installed by the contractor, or his own factory-trained crew.

But also this!

3 On-Premise Maintenance

Each local distributor is staffed with skilled, factory-trained technicians. They also have complete stocks of standard replacement parts. Continuous, uninterrupted performance of every Executone system is assured.

4 Personnel Instruction

Local Executone representatives instruct your clients' personnel in the proper use of Executone Systems. This planned program assures maximum benefits through proper operation and utilization of their systems.

Architects and engineers are invited to send for Executone's 325 page Reference Manual "J-12." No charge or obligation. Please use your letterhead.

Executone

INTERCOM AND SOUND SYSTEMS FOR HOSPITALS, SCHOOLS, HOMES, PLANTS, OFFICES

415 Lexington Ave., New York 17, N.Y. • In Canada... 331 Bartlett Ave., Toronto

The Record Reports

23ff The Dwelling House: An Emerging Technology; Special Summer Program presented jointly by the Department of Architecture and the Course in Building Engineering and Construction of the Department of Civil and Sanitary Engineering; through July 2—Massachusetts Institute of Technology, Cambridge, Mass.

27ff Exhibition of contemporary Danish architecture—The Octagon, Washington, D. C.

Office Notes

Offices Opened

Bradley Ray Storrer announces opening of offices for the practice of architecture and interior design at 22148 Michigan Avenue, Dearborn, Mich.

George Loane Tucker, A.I.A., Architect and Industrial Construction Consultant, announces the reopening of Sauganash offices at 5877 North Kilbourn Ave., Chicago 30, Ill.

Firm Changes

Lonnie O. Adkins and C. Reuben Johnson have announced the formation of a partnership for the practice of architecture and engineering, with temporary offices located at Highway 13 and Egan Town Road, Route 1, St. Paul 11, Minn.

George Fred Ashley, A.I.A., partner in the firm of Ashley, Keyser and Runge, Architects, 268 Market Street, San Francisco, announces the closing of his consulting office at 465 California Street, San Francisco.

Richard C. Brigham and Joseph L. Eldredge, A.I.A., announce formation of the new firm Brigham-Eldredge, Architects, with offices at One Acorn Street, Boston 8, Mass.

Jacob M. Hettel and Robert L. Schwartz have been named associates in the Chicago architectural firm of A. J. Del Bianco, and the firm name is being changed to A. J. Del Bianco & Associates. Offices are at 5501 West Irving Park, Chicago.

Ernest Forell has announced that he will continue the practice of architecture, following the dissolution of the former firm of Martin & For-

A New "FIRST" on New York's Skyline!

Deering-Milliken & Co. Inc. Building, New York City's first machine-applied direct-to-steel fireproofing job. Architect: Carson & Lundin, New York, N.Y. General Contractor: Turner Construction Company, New York.

Zonolite and modern plaster machines were used to fireproof steel floors and beams. Plastering Contractor: E. B. Carley & Company, Jackson Heights, New York.

Zonolite is tops with plasterers. "I use Zonolite wherever vermiculite is specified," says Plastering Contractor E. B. Carley, above left, talking to Zonolite representative. "Zonolite is always absolutely uniform, sure to do the best kind of job."

for The First Time...FIREPROOFING Direct to the Underside of Steel Floors—"Machine-Gun" Applied!

New Advanced Technique Surpasses Fire Rating Requirements... Speeds Work Progress... Reduces Material Costs!

ZONOLITE®

MAKES HISTORY!

In the new Deering-Milliken & Co. Inc. Building, Zonolite vermiculite fireproofing was "machine-gunned" directly to the underside of steel floor decking for fire protection. It's the first job of its kind in New York.

Zonolite and the machine technique made it feasible to achieve substantial savings in time and materials. Other benefits of this new technique: Reduction in floor height; ease of tenant and mechanical changes; 4-hour fire protection. Zonolite and the speedy plaster machines were hailed as "accelerators in the coordination of the trades"—a further contribution to over-all efficiency and economy.

What happened in New York is happening in many other cities, as architects and engineers make use of new Zonolite direct-to-steel fireproofing. Get the whole Zonolite story! Tear out the coupon.

MAIL COUPON TODAY FOR FREE BOOKLET

ZONOLITE COMPANY

Dept. AR-48, 135 S. LaSalle Street, Chicago 3, Ill.

Please send me booklet PA-41 on Zonolite Plaster, Acoustical and Fireproofing systems.

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City_____ Zone_____ State_____

NEW WESTING WATER COOLER

- **Most compact made!** Just 6¼" slim, 18¾" wide, 22⅝" high.
- **Use with new or existing fountains** in schools, offices, factories, restaurants, institutions.
- **Two sizes!** 5 gallon size serves up to 60 people; 10 gallon size serves up to 120 people.
- **Easily accessible adjustable thermostat** lets you select desired water temperature.
- **5-Year Protection Plan** on sealed-in refrigeration system.
- **Completely interchangeable**—both 5 and 10 gallon size fit in same space. May be interchanged to meet changing requirements without building alterations.

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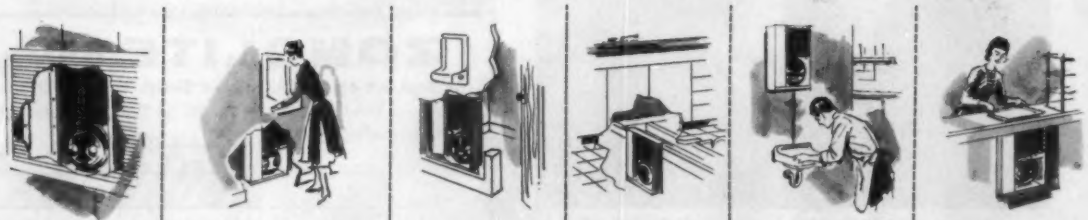
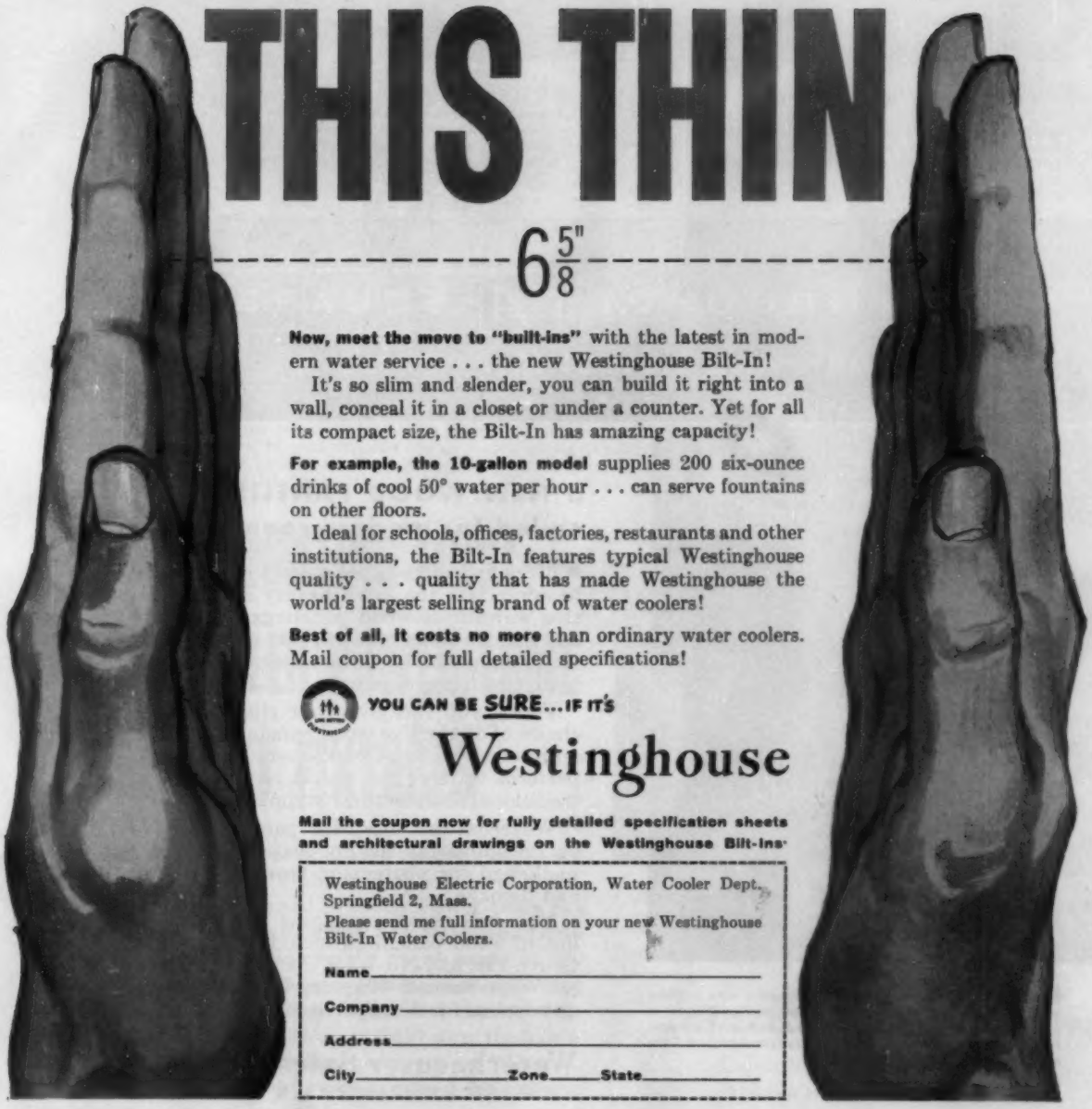


IN THE WALL | BEHIND THE WALL | IN A CLOSET | ON A JOIST | ON THE WALL | UNDER A COUNTER

HOUSE "BILT-IN" FITS IN A SPACE THIS THIN



Now, meet the move to "built-ins" with the latest in modern water service . . . the new Westinghouse Bilt-In!

It's so slim and slender, you can build it right into a wall, conceal it in a closet or under a counter. Yet for all its compact size, the Bilt-In has amazing capacity!

For example, the 10-gallon model supplies 200 six-ounce drinks of cool 50° water per hour . . . can serve fountains on other floors.

Ideal for schools, offices, factories, restaurants and other institutions, the Bilt-In features typical Westinghouse quality . . . quality that has made Westinghouse the world's largest selling brand of water coolers!

Best of all, it costs no more than ordinary water coolers. Mail coupon for full detailed specifications!

YOU CAN BE SURE...IF IT'S

Westinghouse

Mail the coupon now for fully detailed specification sheets and architectural drawings on the Westinghouse Bilt-Ins

Westinghouse Electric Corporation, Water Cooler Dept., Springfield 2, Mass.

Please send me full information on your new Westinghouse Bilt-In Water Coolers.

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LOC-WALL: Idaho White Pine and Inland Red Cedar in Formal and Traditional styling; Larch in Formal styling. Plywood Panels look like individual boards of random lengths and widths, edge and end-Vee'd. Also produced with Gruve-Ply pattern. Interlocking furring strips are already attached.

GRUVE-PLY: Idaho White Pine or Knotty Cedar plywood produced with surfaces carefully sliced like the most expensive imported woods. Looks like individual boards side by side. Goes up quickly, economically. Pre-grooved edges give uniform joints, eliminate need for mouldings.

Weyerhaeuser 4-SQUARE®

LUMBER AND BUILDING PRODUCTS

NU-WALL: Ponderosa Pine paneling with random Vee horizontal end-matching. Kiln-dried and packaged to specified 7′ or 8′ lengths. Comes in three distinctive stylings: Formal (clear), Traditional (small to medium knots) or Contemporary (medium to large knots).

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styled for modern room design

● More and more home owners are learning to appreciate the extra beauty and decorative warmth of wood panelings. And more and more architects are serving this trend by including panelings as important features in their new home designs.

Today you can give your clients a wide choice of distinctive wood panelings . . . with an interesting range of Western species and patterns to meet the trends of modern and traditional architectural stylings.

Weyerhaeuser 4-Square panelings arrive on the job ready for application—carefully packaged for protection from dust, stain and damage.

You will enjoy examining the complete line of wood panelings, including Loc-Wall, Gruve-Ply, and Nu-Wall. Contact your nearest Weyerhaeuser 4-Square Lumber Dealer, or write us for descriptive literature.

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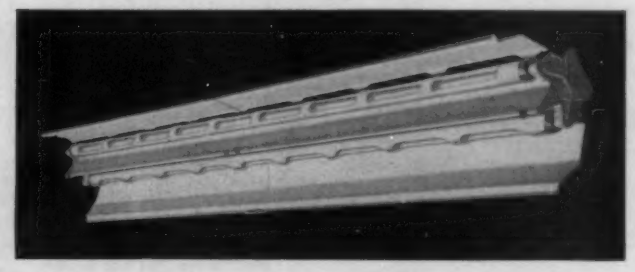
FIRST NATIONAL BANK BUILDING • ST. PAUL 1, MINNESOTA

Suspended 30 feet above the playing court of the Boston Badminton and Tennis Club are two rows of Wheeler Power-Lume fixtures with G. E. Power-Groove lamps. Beneath this new indoor sportslighting development, players (above) open a match in bright, glarefree, shadowless light. Completing the ideal lighting situation, club members note no discernible stroboscopic or "flicker" effect when they or the ball are in motion. Footcandle level runs from 35 at net to 30 at baselines.

A SPORTS LIGHTING FIRST— WITH WHEELER POWER-LUME FLUORESCENT FIXTURES

Boston Badminton and Tennis Club's recently relighted court represents a major breakthrough in indoor sportslighting as newly developed Wheeler Power-Lume fixtures with Power-Groove lamps are installed. Lamp grooves are positioned downward at an angle of 50° from the vertical for the primary purpose of obtaining excellent flat-bottomed candlepower distribution. This eliminates undue concentration of light directly below fixtures. The result is much less glare and no "flicker", with a minimum number of rows required for uniform illumination over a given area.

Power-Lume by Wheeler — America's most versatile new fixture in 2 types of construction, "F" and "V" . . . specifically designed to utilize fully the extra illuminating power of the new Power-



Groove lamps. Delivers *twice* the amount of lumen output per foot of lamp length. For complete details, write for New Product Data Sheet No. 100 D.

Wheeler REFLECTOR COMPANY

(Division of Franklin Research Corp.)

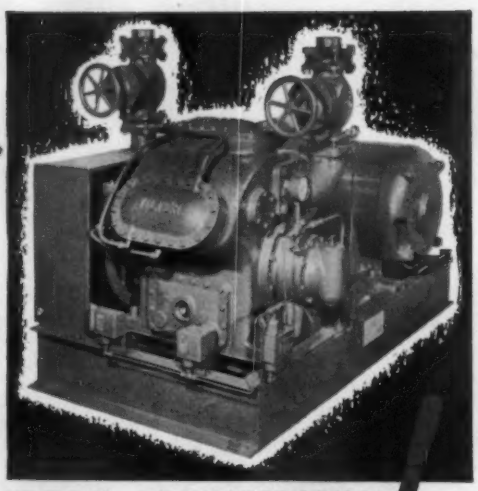
275 Congress Street, Boston 10, Mass.

Distributed Exclusively Through Electrical Wholesalers

Before deciding...

compare the

Vilter VMC



COMPRESSOR—FREON OR AMMONIA!

The compressor being the heart of the refrigeration system deserves the most attention. For dependable day-in-day-out operation, the compressor must be sturdy, well built, designed for long life. It must be easy to maintain. Naturally wearable parts must be easy to replace. You will save yourself future expense and needless worry if you see that your compressor incorporates the points below.

CHECK THESE POINTS	VILTER	5 OTHER WELL-KNOWN MAKES				
		A	B	C	D	E
1. Removable alloy steel cylinder sleeves that permit low cost, easy replacement. Eliminates need for oversize pistons, rings, etc., which are common in frame bored cylinders	Yes	Yes	No	No	Yes	Yes
2. A double bellows oil immersed shaft seal that prevents air or moisture from entering the system when operating below atmospheric pressure	Yes	No	No	No	No	No
3. A crankshaft double row roller bearing arrangement that allows the shaft to expand freely, thus preventing excessive thrust loads on the bearings	Yes	No	No	No	No	No
4. A statically and dynamically balanced crankshaft that assures smooth operation	Yes	Yes	Yes	Yes	—	Yes
5. Spring loaded safety heads that protect the compressor against refrigerant slugs	Yes	No	Yes	No	No	Yes
6. Removable connecting rod bearings that can be changed without also removing the connecting rod and piston assembly	Yes	No	Yes	Yes	Yes	Yes
7. Necessary to dismantle entire unit for repairs	No	No	Yes	Yes	No	No
8. Suitable for high stage or booster operation	Yes	Yes	No	No	Yes	Yes
9. Light weight aluminum pistons with upper half of piston wall having tapered thickness to conduct heat from top of piston. This prevents excessive piston expansion and reduces possibility of piston seizure	Yes	No	No	Yes	No	No
10. A separate oil filter, in addition to crankcase screen, to super-clean oil and thus reduce wear to a minimum	Yes	Yes	No	Yes	Yes	Yes

From this comparison, you know that *you get more for your money* with Vilter. It will pay you to consider Vilter for your next refrigeration or air conditioning installation.

Vilter®

REFRIGERATION and AIR CONDITIONING

WRITE for your FREE Vilter Bulletins: No. 817—"Vilter VMC Ammonia Compressors"—and No. 820—"Vilter VMC Freon Compressors"—to THE VILTER MANUFACTURING CO. Dept. 0-719, 2217 South First Street Milwaukee 7, Wisconsin

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sell, at 401 Alaska Trade Building, Seattle 1, Wash.

Announcement has been made of the association of W. Dudley Hunt Sr., with the firm of W. Dudley Hunt Jr., A.I.A., Architect, with offices in New Orleans and Pensacola, Fla. Mr. Hunt Sr., recently retired as general superintendent for Raymond Concrete Pile Company in Columbia, will be general supervisor and manager of the Pensacola office.

Thomas F. Galvin has been made an associate of the architectural firm of Kokkins and Lyras, 111 East 38th Street, New York City.

Ben Schlanger, Architect, 108 East 37th Street, New York City, is now devoting his entire practice to consultation on auditorium and audio-visual structures.

Frederick G. Stickel, A.I.A., Mark T. Jaroszewicz, A.I.A., and Anthony R. Moody, A.I.A., have announced the formation of a partnership as Stickel, Jaroszewicz and Moody, Architects, with offices at 286 East Brown Street, Birmingham, Mich.

The firm formerly Sundeleaf, Hagestad & Peace is now Sundeleaf and Hagestad, A.I.A. Offices are in the Portland Trust Building, 319 Southwest Washington Street, Portland 4, Ore.

New Addresses

Elmer J. Guran, A.I.A., 134 East Thornton Street, Akron 11, Ohio.

John MacWilliam, Architect, 495 Main Street, Metuchen, New Jersey.

Murphy and Mackey, Architects, 6124 Enright, St. Louis 18, Missouri.

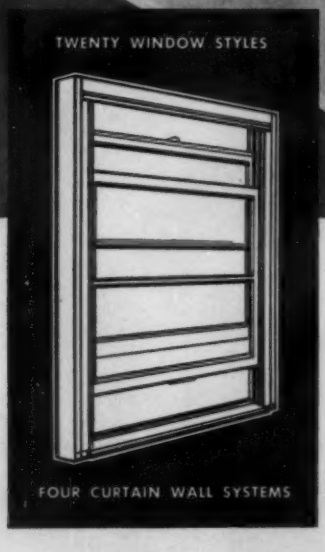
The Edwin T. Reeder Associates, Architects, No. 1 Miami Building, Miami, Fla.

Addenda

The photographs of the Miro Studio shown on pages 138 and 140 of the January issue in the article on the work of Jose Luis Sert were the work of Messrs. Gomis-Prats of Barcelona. The RECORD regrets the inadvertent omission of credit.

Ferdinand Dagher, Architect, of Beirut, has written to state that architectural credit on the Hotel Phoenicia Intercontinental (AR, May 1957, pages 220-221) should have been given as follows: architects—Ferdinand Dagher & Rodolphe Elias; associate architect—Edward D. Stone

Satisfaction Was Specified
UALCO Was Chosen...



Carillon Hotel, Miami Beach; Architect, Norman M. Giller & Assoc., Miami Beach

For Florida's Largest Hotel, Luxurious Carillon

Keynote, elegance throughout; and elegance combines with practicality, as witness the windows. The Carillon's thousands of Ualco Aluminum Double Hungs have effective weatherstripping . . . tubular ventilator sections for rigidity . . . frame corners *swedged and welded* . . . integral installation fin. And Ualco Windows give satisfaction . . . enrich the design, work smoothly, close tightly. Complete planning service at *your* service.

• World's Largest Manufacturer of Aluminum Windows

SOUTHERN SASH SALES & SUPPLY CO., Inc.

Sheffield, Montgomery, Ala.; Van Nuys, San Leandro, Calif.; Hialeah, Tampa, Fla.; Elizabeth, N. J.; Canton, O.

Ualco

Architects and Engineers are planning a

Are you giving them every reason to specify <u>your</u> products?

Again in 1958, according to F. W. Dodge Corporation estimates, contracts for new school construction will reach a new high in *physical volume* (216 million sq. ft.). *Dollar volume* will approach $3.0 billion.

Equally important—the outlook beyond 1958 warrants a strong long-range program to win preference for your products among architects and engineers who year in and year out plan over 99% of all U. S. schools.

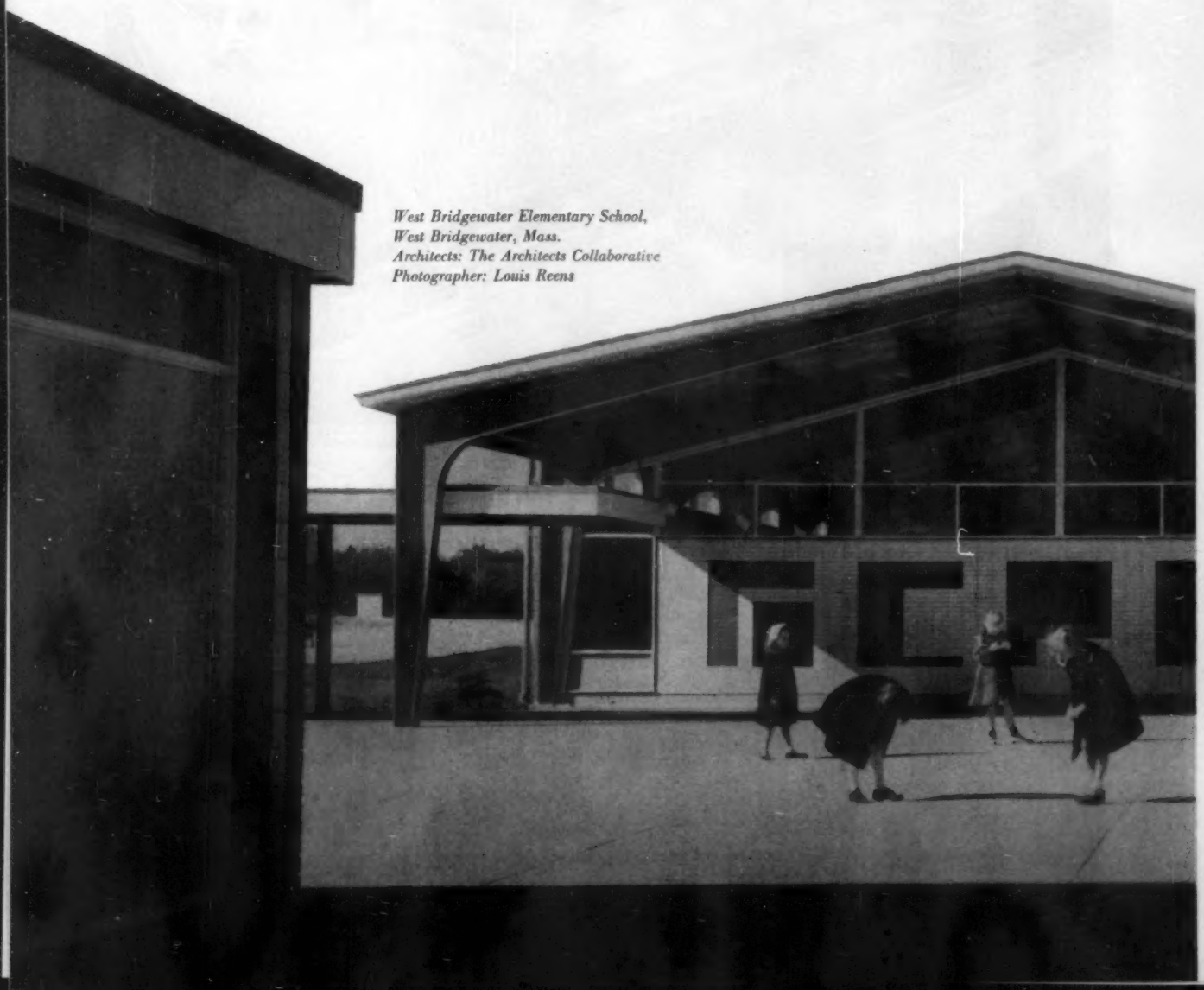
After a decade of unprecedented school construction, classroom shortages in public elementary and secondary schools remain acute and are variously estimated from 140,000 to 300,000.

Moreover, between now and 1965 a 20 per cent expansion of public school plant is needed to accommodate some seven million additional students. And the problem is compounded by population shifts.

Beyond that, new educational methods and programs, served by better building products and better-planned buildings, are rendering obsolete large numbers of older schools.

Architects and engineers are multiplying school markets by demonstrating that well-designed schools are not only *places* for learning but efficient and economical *instruments* for learning. They are raising America's school building sights from educational capacity to educational capability.

To inform architects and engineers of changing educational needs and the finest achievements in school design,



West Bridgewater Elementary School,
West Bridgewater, Mass.
Architects: The Architects Collaborative
Photographer: Louis Reens

record volume of school construction

Architectural Record in the last five years has published 41 per cent more pages on schools than any other magazine.

This is one reason why in a recent study conducted by a prominent advertising agency* architects and engineers —by a margin of better than 2 to 1—voted Architectural Record the magazine supplying them with "the most helpful information on school design."

Architectural Record will deliver your advertising message to architects and engineers *verifiably* responsible for planning over 94% of all U. S. school construction.

**Name—and results of study—on request.*

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- *Verifiable* coverage of 88% of *all* architect-planned building, nonresidential and residential, small and large.
- Largest architect—and engineer—circulation.
- Lowest cost per page per 1,000 architects and engineers.
- Architect and engineer preference, revealed in 111 out of 117 studies *SPONSORED BY BUILDING PRODUCT MANUFACTURERS AND ADVERTISING AGENCIES.*
- Advertising leadership—by a margin of 82% more advertising pages than the second magazine in the field (2 months, 1958).

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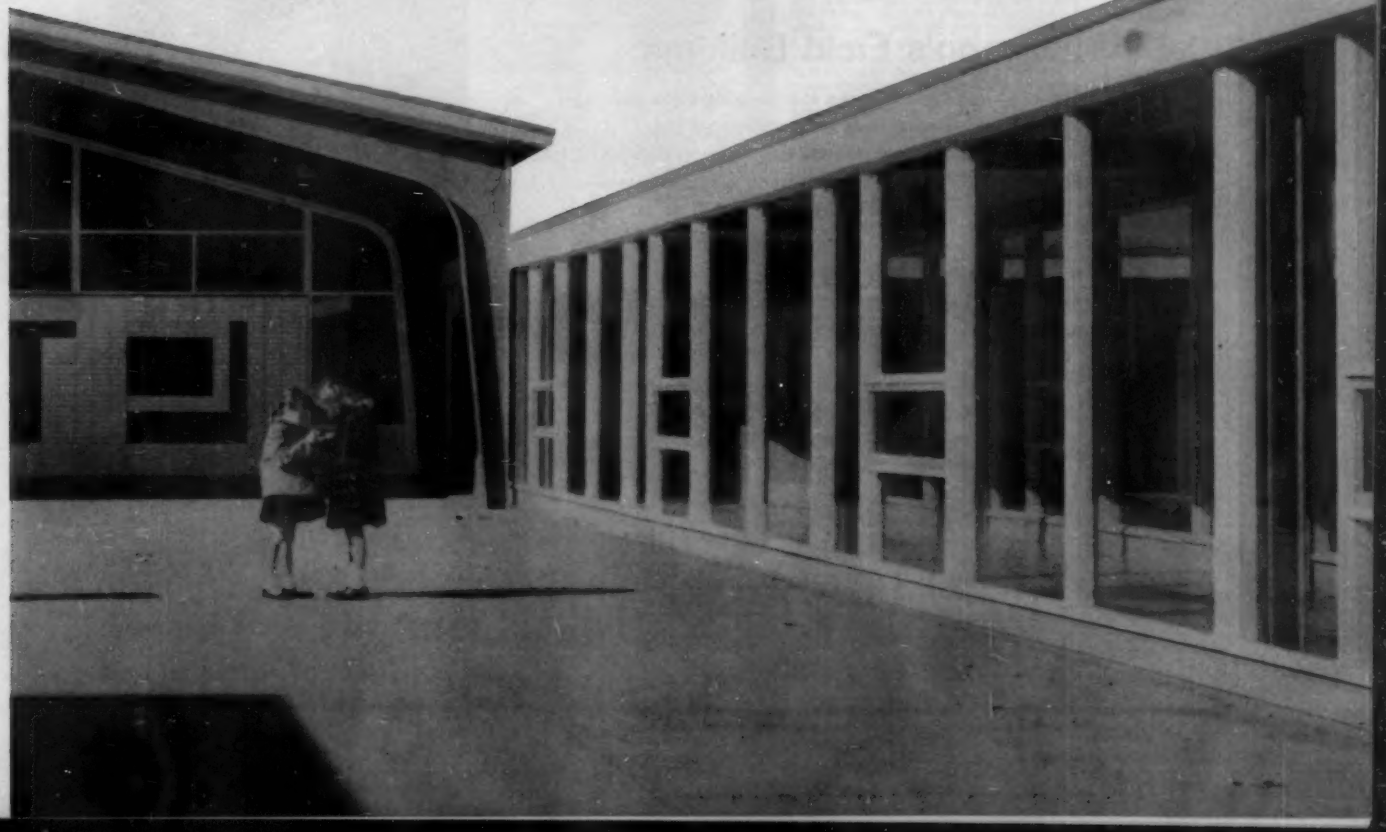
NOTE: *A well-rounded sales program for most products in the new school market must include the* school administrator, *focal point for the formulation of educational programs and school building needs.*

Architects and engineers specify; *school administrators* approve *and* buy.

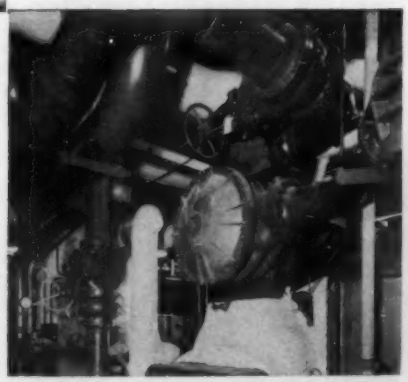
A combination of Architectural Record *and* The Nation's Schools *will give you top coverage of architects, engineers* and *school administrators at the lowest cost.* Ask us for details.



Air Conditioning with

USS **National Pipe—**

Chicago's Field Building



One of Chicago's landmarks, the towering Field Building on South LaSalle Street, recently completed the installation of a new air-conditioning system. USS NATIONAL Seamless Steel Pipe was used throughout the system—a total of 127 tons of it—in sizes from 3" O.D. to 18" O.D.

Need first-quality pipe for air-conditioning, heating and power installations? Need seamless steel pipe that will pay you back in outstanding service many times over for every dollar you spend? Then just say "NATIONAL Seamless." And, for further information or immediate assistance with your pipe problems, write to National Tube Division, United States Steel Corporation, 525 William Penn Place, Pittsburgh 30, Pa.

USS and National are registered trademarks

"The world's largest and most experienced manufacturer of tubular products—NATIONAL TUBE"

National Tube Division of USS United States Steel

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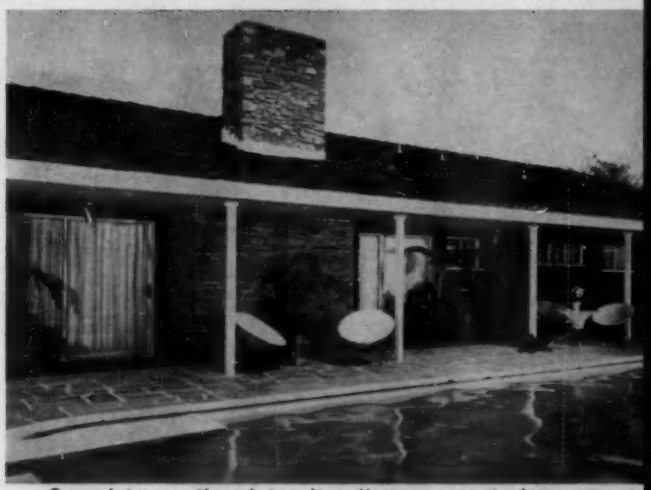
d'Cor...

AMONG SLIDING GLASS DOORS THERE'S NO "APPROVED EQUAL!"



Complete weather integrity allows any exterior use.

And to help you prove it to yourself, we have included our specifications . . . check them against the specs of any other door, regardless of price, and you'll agree the d'Cor has no "approved equal."

Its dramatic, functional styling and its advanced engineering design share equally as reasons for its great popularity, both with architects and builders.

Its many exclusive features set it apart from all other sliding glass doors; whenever your plans call for the finest available, you can specify the d'Cor by Nudor with full confidence!

Note the clean, crisp styling. Even the shock bumpers are concealed from view—no "tacked on" afterthoughts mar d'Cor's rich appearance.

Only d'Cor offers this truly flush, trackless threshold. Wide, flat surface of nylon tired, ball bearing rollers assures silent sliding action and longest possible life . . . and, there's nothing to trip over!

SPECIFICATIONS

1. GENERAL—All aluminum sliding glass door frames as shown on plans shall be d'Cor aluminum sliding glass doors as are manufactured by Nudor Manufacturing Corporation, 7326 Fulton Avenue, North Hollywood, California.

2. MATERIALS—**A. Structure:** Frame and sliding sections shall be fabricated from extruded 6063-T5 aluminum alloy custom shapes and alumilited Alcoa Spec. 204-R-1. **B. Weathersealing:** Doors shall be completely weather sealed using Schlegel certified, densely woven, mildew-proofed and silicone treated wool pile weatherseal. **C. Fasteners and Fittings:** Metallic fasteners and fittings shall be stainless steel, aluminum, cadmium plated steel or otherwise corrosion resistant.

3. DESIGN—**A. General:** Sliding and fixed sashes shall be engineered around standard size 1" insulation and ¼" plate glass. Rabbet design shall conform to specifications established by insulation glass manufacturers. Glass stops shall snap into sash members by action of independent, spring steel clips. **B. Structure:** Sliding section shall be bottom rolling on grease-packed and sealed radial ball bearing, line-contact nylon roller assemblies, fully adjustable and accessible from the outside of sashes. Moments of inertia on following shapes are not to be less than: fixed interlocker .449 in.⁴ and sliding interlocker .395 in.⁴ on an axis parallel to the glass; lockstile .433 in.⁴ on an axis perpendicular to the glass. All Schlegel wool pile shall be shielded by a solid barrier. Lockstile shall interlock into lock jamb. Interlockers shall be baffled to decrease infiltration. Threshold shall be of flush trackless design sloped to exterior and shall have weeps for drain. **C. Styling:** Sash frame members shall be sculptured design that blends joining of horizontal and vertical members into clean, concealed joints. Screws and bumpers, top and bottom, shall be hidden from view.

4. HARDWARE—**A. Pulls:** Handle shall be d'Cor contour pull, both on exterior and interior. Pull insert and escutcheon shall be d'Cor charcoal grey. **B. Locks:** Each door unit shall have a spring locking jam-proof adjustable deadbolt night latch. Five-pin Schlage masterkeying cylinder mounted flush to exterior is optional.

5. ASSEMBLY—Unit to be shipped in knocked-down condition. All components, sub assemblies and fittings shall be furnished.

6. INSTALLATION—**A. Erection:** Erection shall be done in accordance with factory specifications under separate contract arrangement. **B. Glazing:** Glass and glazing shall be furnished by others under separate contract arrangements.

7. SCREENS—Sliding screens shall be bottom rolling and spline guided on adjustable nylon rollers. Screen framework shall be fabricated 6063-T5 hollow aluminum shapes. Screen shall be fitted with 18 x 14 mesh aluminum wire cloth; 18 x 14 mesh fiberglas wire cloth optional. Night latch shall be furnished for interior latching.

Member SLIDING GLASS DOOR AND WINDOW INSTITUTE.

NUDOR

MANUFACTURERS OF HI-LO, NUDOR, d'COR ALUMINUM SLIDING GLASS DOORS AND NUDOR HORIZONTAL ROLLING GLASS WINDOWS

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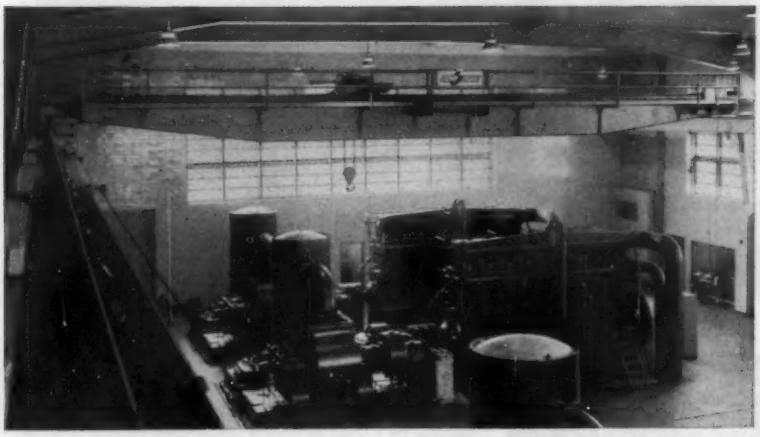
WORM AND GEAR DESIGN ELIMINATES LOAD BRAKE ADJUSTMENT AND MAINTENANCE IN THIS

CONCO

OVERHEAD ELECTRIC CRANE



CONCO "CRB" OVERHEAD ELECTRIC TRAVELING CRANE installed in municipal sewage disposal plant.

A feature of this Conco "CR" series crane is a worm and gear mechanical load brake which provides maximum safety, lower first cost, and the elimination of any adjustment or service needs. The brake offers a virtually limitless service life. It has only 2 moving parts. Conco "CR" cranes are one of many types custom-built for all classes of service. To engineers Conco offers two important facilities: A plant flexibility that permits true custom-building at a practical cost. And, a staff qualified by 50 years experience to provide such design assistance as you may request. May we submit specification data, an estimate, or a proposal on your next crane requirement? Write for Bulletin 5000A.

APPLICATION NOTE: Conco has engineered special spark-proof and explosion-proof cranes for installations such as Naval Ammunition Depots, U. S. Air Force Bases, the U. S. Atomic Energy Commission, and Thiokol.

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See Our Catalog: Sweet's Industrial Construction File

The Record Reports

Data on Recreation Facilities Given in Planning Guide

As a revised edition of its 1947 book on the subject, the Athletic Institute, Inc., has issued "Planning Facilities for Health, Physical Education and Recreation." The guide was prepared by participants in the Institute's National Facilities Conference, held May 5-12, 1956, at the Kellogg Center for Continuing Education at Michigan State University, Lansing. Delegates were drawn chiefly from the education and physical education fields, but from the areas of architecture and park planning as well. The book is directed to "public officials immediately concerned with these programs and the technical specialists who plan and construct such facilities."

A list of the chapters, with a sampling of their contents, includes:

—*principles and procedures for planning facilities:* a description of various types of recreational facilities;

—*outdoor facilities:* includes material on spaces for spectator and participator outdoor sports;

—*resident camps:* a new section prompted by the conference's observation of an increase in camping activity generally, and a budding trend of camps for schools and colleges placing an accent on "outdoor education";

—*indoor facilities:* contains estimates of floor space, seating space, locker space needed for various types;

—*recreational building:* a catchall phrase applying to structures ranging from large community buildings with swimming pool and gymnasium, to skating rinks, park shelters, craft shops and bathhouses;

—*school and community swimming pools:* contains construction details for indoor and outdoor pools;

—*school health facilities:* provisions for health and safety instruction, health care, generally healthy environment;

—*stadiums and field houses:* includes requirements for structures seating no more than 10,000 spectators;

—*general plant features* guide to lighting, electrical systems, audio systems and acoustics, heating and ventilating, sanitation, circulation, custodial facilities, suggested finishes, color.

The guide is available from the Athletic Institute, Inc., 209 South State St., Chicago 4, Ill., for $2.50.

... and that's what they get when you select Westinghouse Life-Line "A" motors for your air conditioning systems

Everybody appreciates a quiet-running air conditioning system . . . many people, by the very nature of their work, not only desire it, they demand it. And, one of the surest ways you can give your customers the quietness they require is by selecting Westinghouse Life-Line® "A" motors for your industrial and commercial air conditioning systems.

Completely sound-engineered, each Westinghouse Life-Line "A" receives a total of 34 separate checks and tests to make sure that you get the quietest motor available today . . . a motor which will contribute substantially to the satisfaction your customers receive from your air conditioning systems.

In addition, your customers will benefit from greatly simplified motor maintenance. Pre-lubrication coupled with fortified insulation and close-tolerance machining makes the Life-Line "A" the nearest thing to a maintenance-free motor available.

For more information on the Life-Line "A" for air conditioning drives, contact your Westinghouse representative. Or, write Westinghouse Electric Corporation, P.O. Box 868, 3 Gateway Center, Pittsburgh 30, Pa. J-22127

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RECORD HOUSES

"RECORD HOUSES" *will focus on...*

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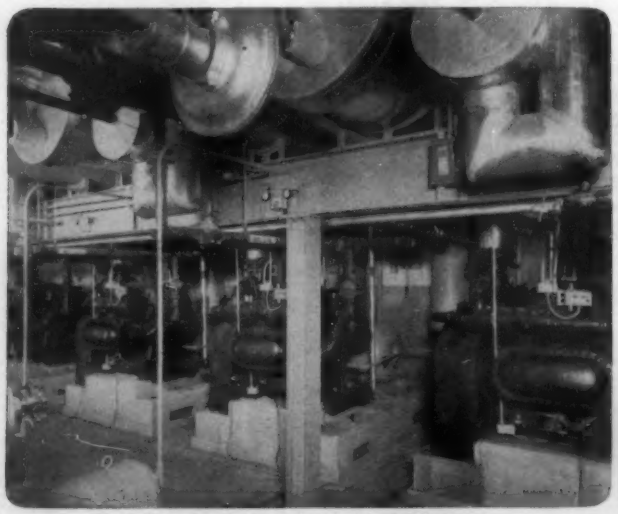
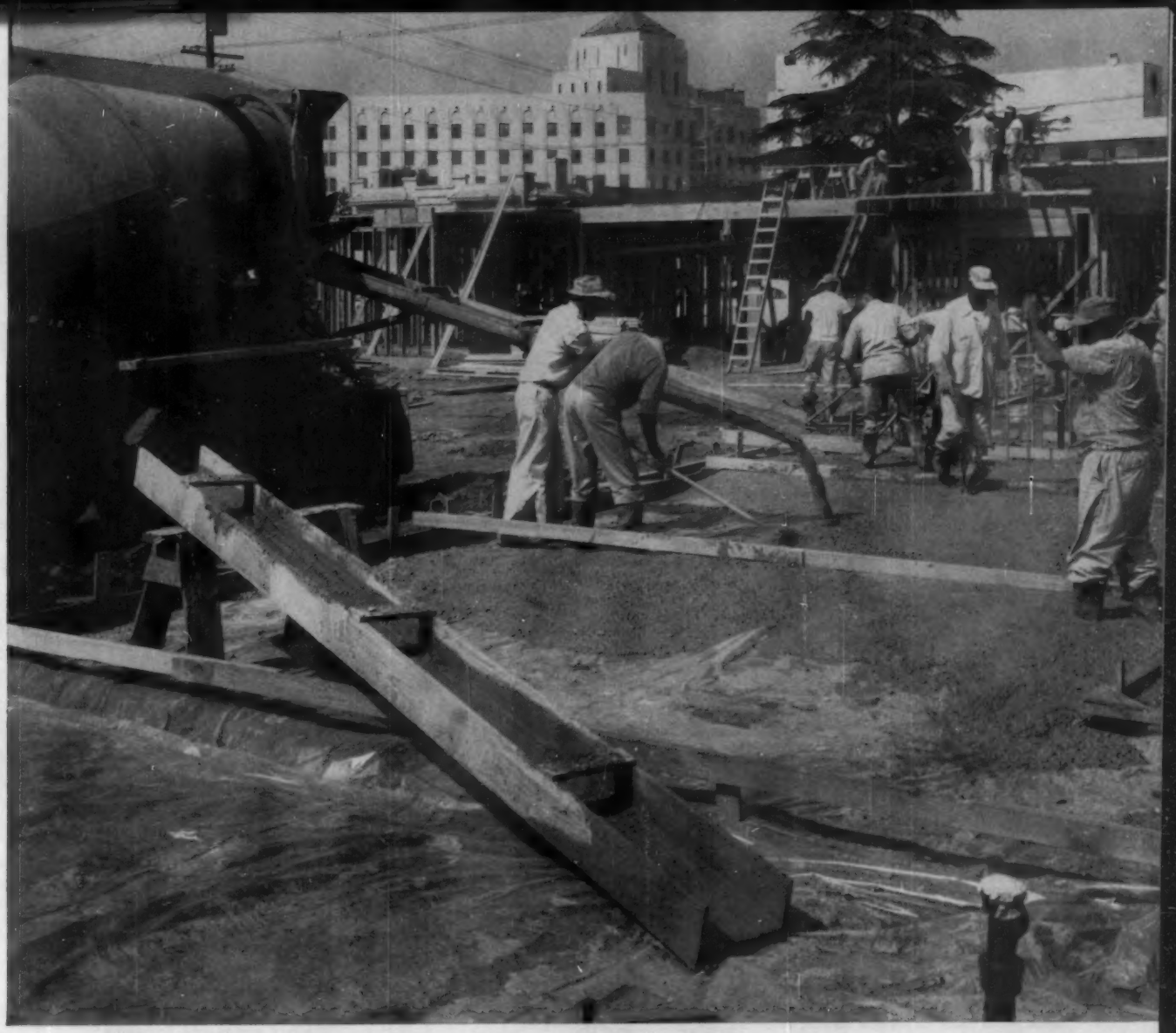


Four Compressors Located in Penthouse

Air Conditioned Banking Room in Fulton Federal Savings



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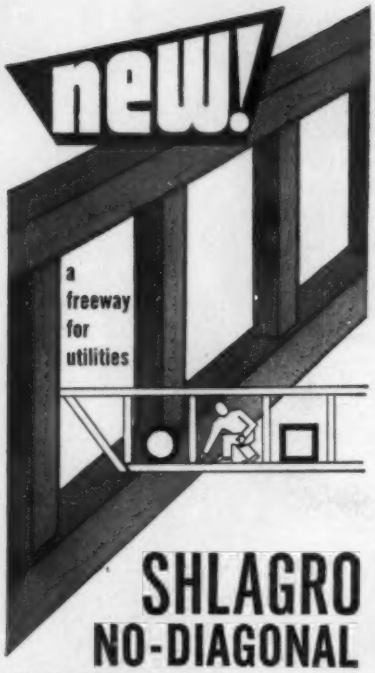

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The Record Reports

Student Competition Aids Study Of Psychiatric Architecture

Students and faculty of a number of U. S. schools of architecture have been participating this year in a unique "competition"—the psychiatric architecture design contest sponsored by the Architectural Study Project of the American Institute of Architects. Although there was some possibility of at least one money award, the sponsors, whose three-year study is financed by a grant from the U. S. Public Health Service, hoped the principal incentive for contestants would be "recognition of original ideas" which might be published as the final section of the book on mental hospital design the study group expects to produce.

Program for the competition is a set of nine principles upon which the future of psychiatric care might be based; objective is "to arrive at new and original ideas of design of psychiatric architecture which are three-dimensional expressions of one or more of these sets of principles." Entries are to be judged by "a group of psychiatrists and a group of architects."

A summary of the design concepts called for by the "principles":

Principle I—A "psychiatric community"—similar to any community but with certain special features—designed as an island within the regular community.

Principle II—A community for older people designed to make it possible for them to do "the maximum living within their limitations."

Principle III—The "day hospital."

Principle IV—Psychiatric offices in a shopping center or some other community area.

Principle V—Vacation facilities combining educational, recreational and psychiatric opportunities.

Principle VI—Space in schools for psychiatric staff and activities; other possible changes in school design.

Principle VII—Doctor's offices considered in the light of the possibility that the family doctor becomes increasingly the mental health counselor of his patients.

Principle VIII—Central psychiatric headquarters and other facilities suggested by the possibility of psychiatric consultation via TV.

Principle IX—Community of medical personnel, where they will live and work, maintaining contact with patients via new rapid forms of communication and transportation.

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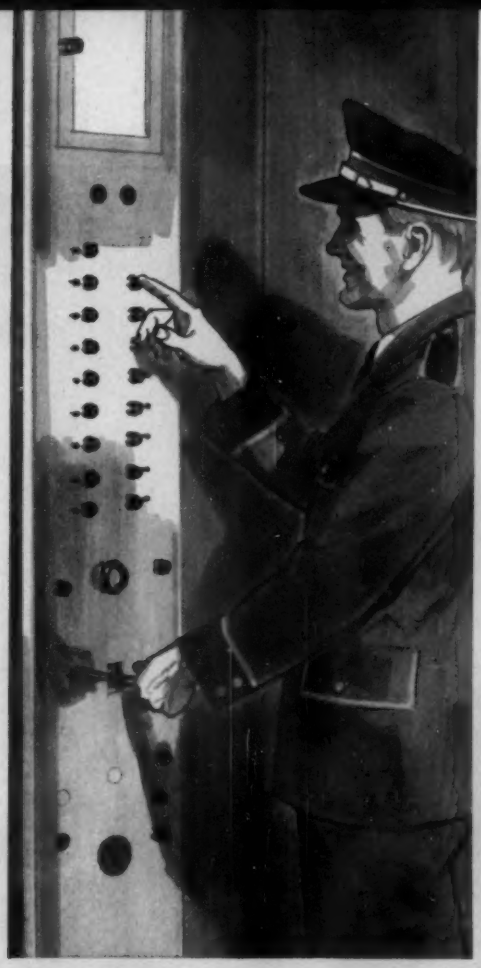

IN 1946—modernized Westinghouse Elevators were automatically operated from push-buttons in the car. Attendants were still required, however, to press the floor buttons and to initiate the closing of the power operated elevator doors.

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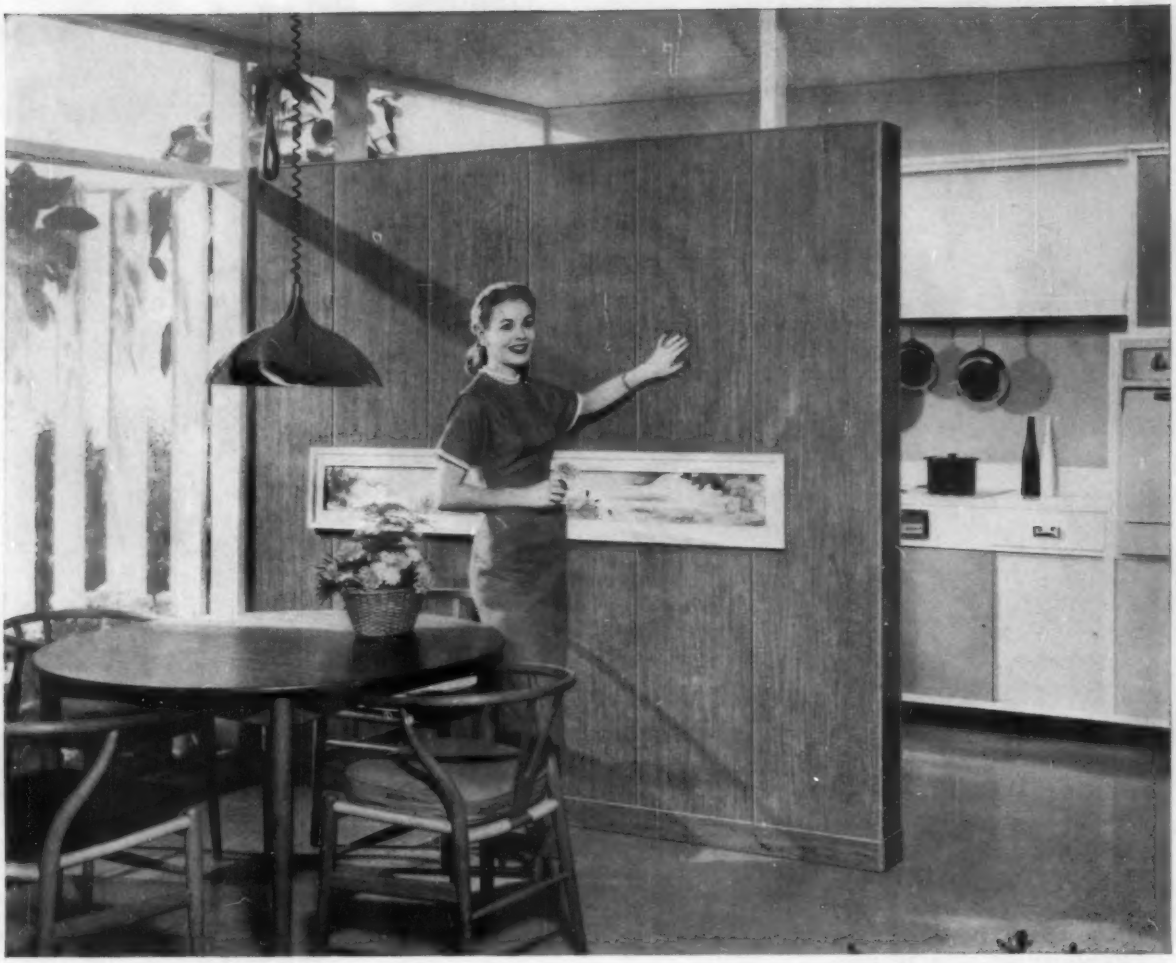

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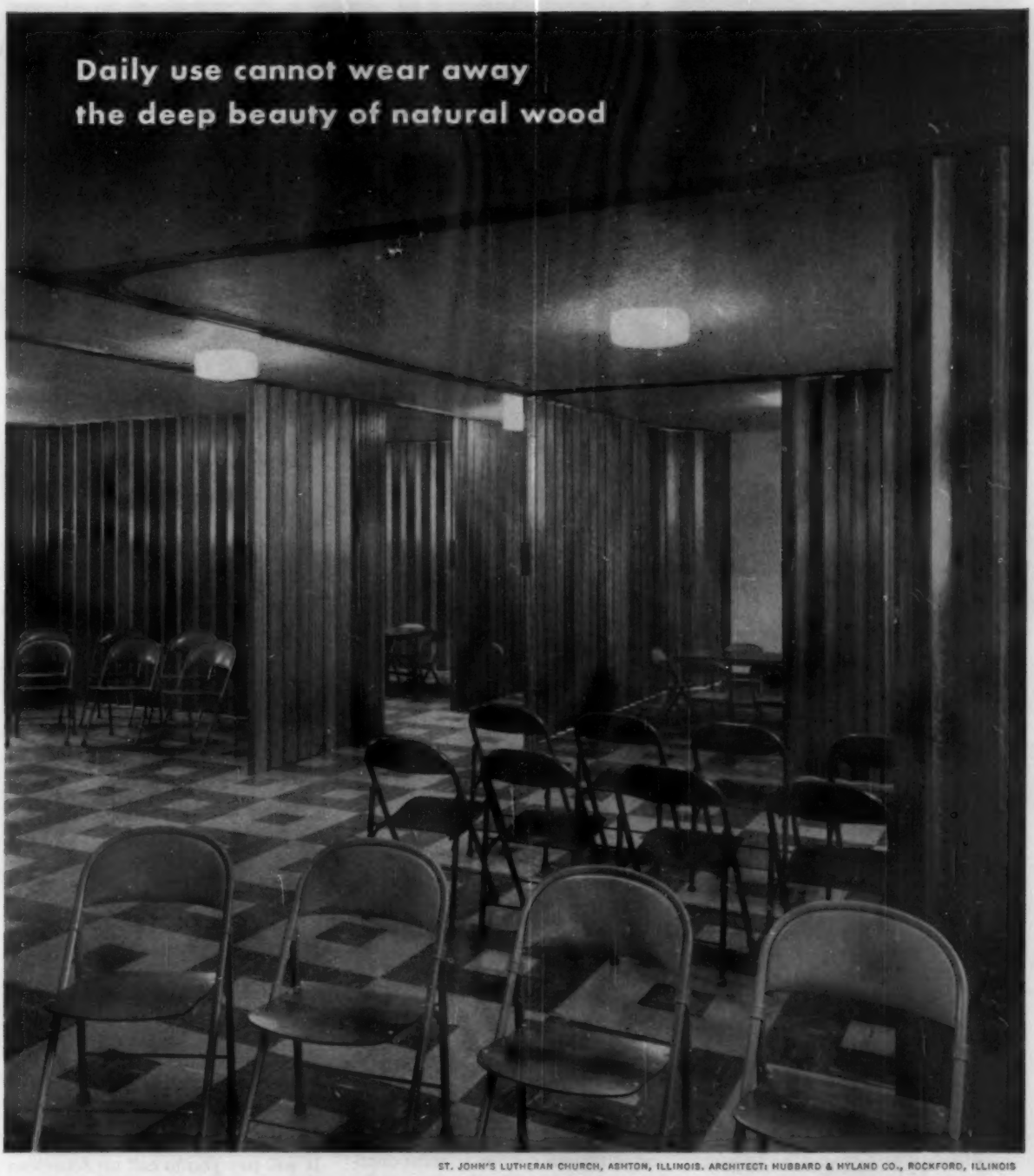

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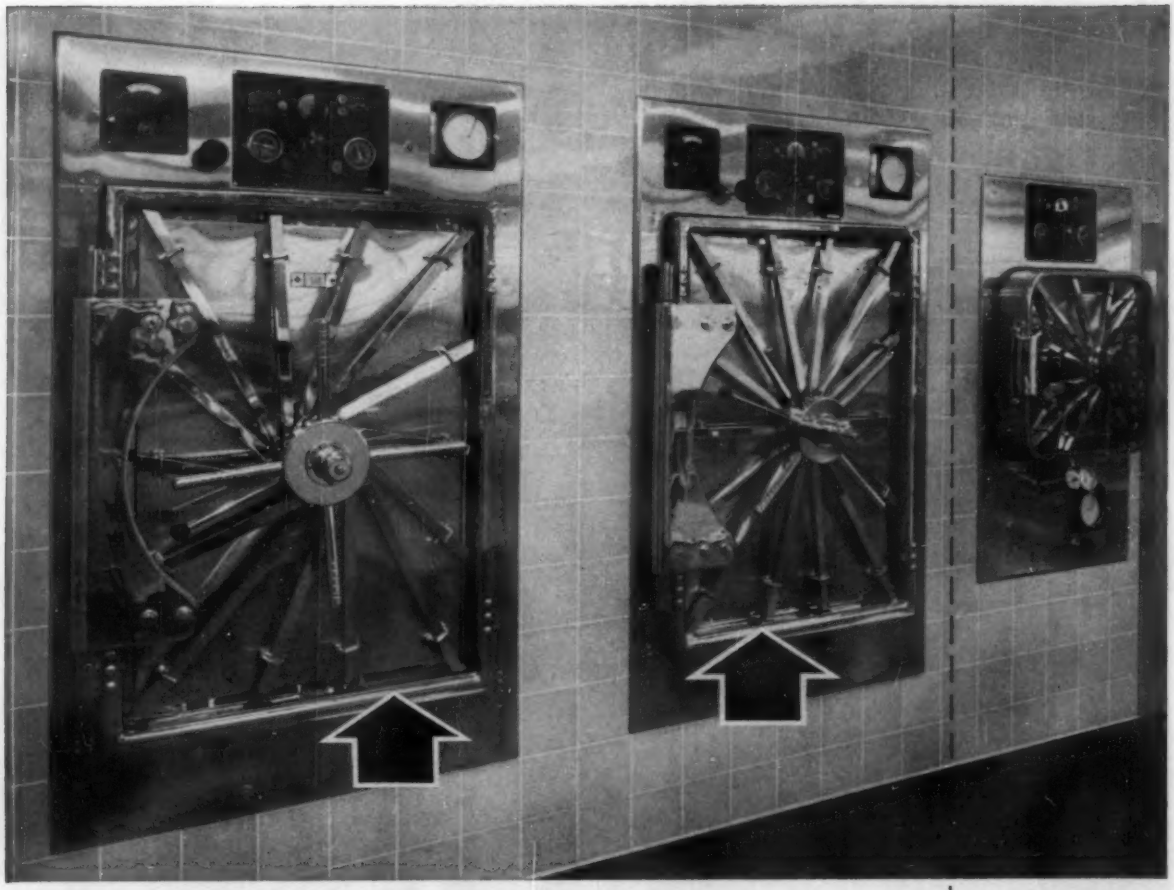

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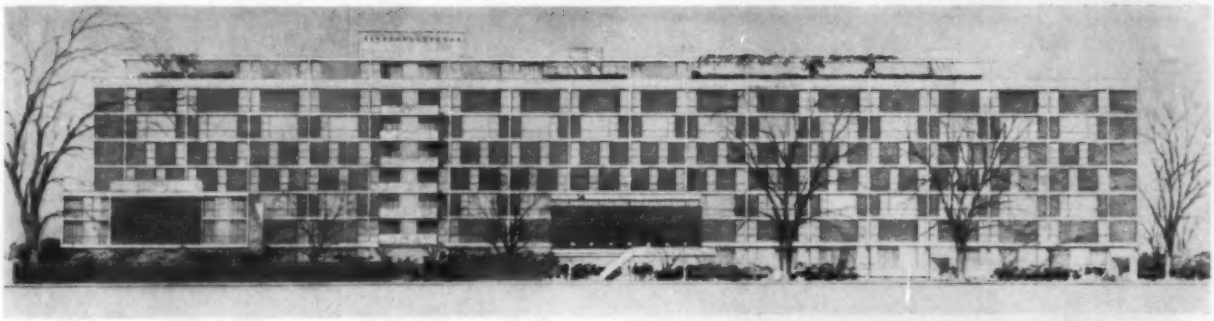

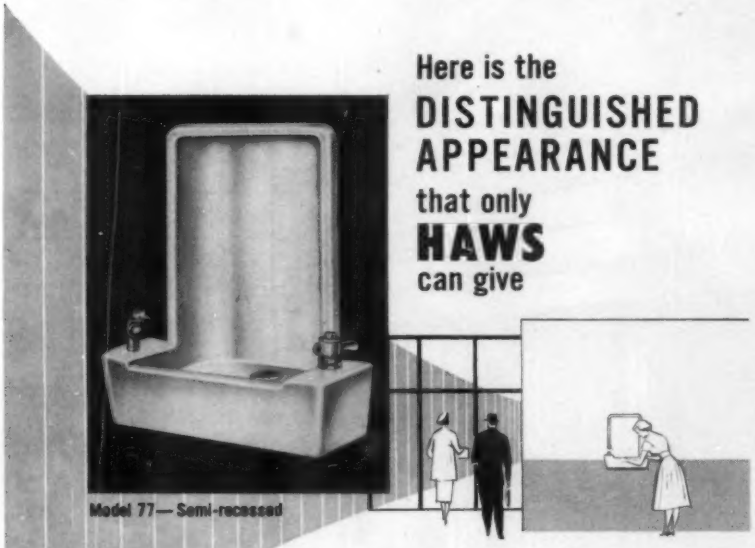

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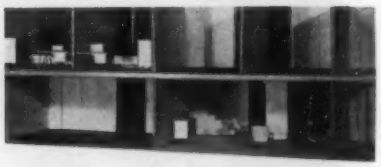
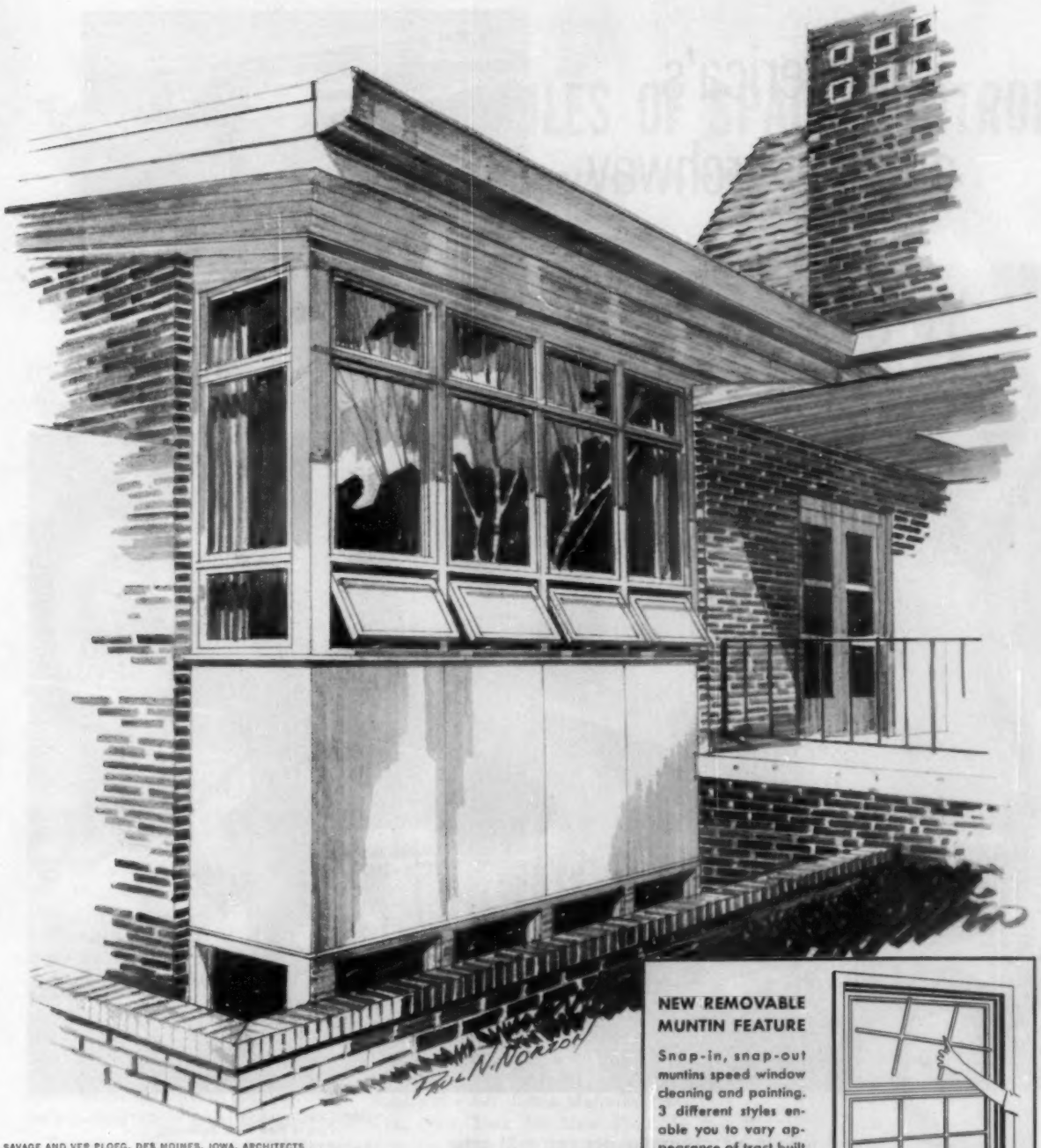


Harvard's "Eighth House" Utilizes "Skip-Stop" Plan to Save Space

As the first step in its Program for Harvard College, announced by President Nathan M. Pusey last year, Harvard proposes to build "Quincy House," named for Harvard's 15th president Josiah Quincy, and provisionally called "Eighth House" because it will be the eighth in the college's system of houses for resident upperclassmen, and part of what Harvard calls "breakfast-table education," an approach to education relying heavily on informal meetings between faculty and students. The dormitory will provide housing for students, faculty tutors and visiting scholars.

A Double-Decker Sandwich

The planning of the new seven-story building calls for an arrangement of duplex-type suites. Each suite will contain four single bed-study rooms, connected by an inside stairway to a living room on the floor above or below it. The result will be four solid floors of bedrooms and two floors of living rooms, sandwiched between the bedroom floors on the third and sixth stories. Corridors will be eliminated entirely on the bedroom floors, and will lead to elevators and main stairways on the living room floors. This is the so-called "skip-stop" arrangement, already used in some apartment houses (as Eastgate), but used here for the first time, the architects believe, in a college building. The advantages of the plan, as seen by Boston architects Shepley, Bulfinch, Richardson & Abbott and the college, are the elimination of noisy corridors and the elimination of expense—the university says the system will keep the cost of



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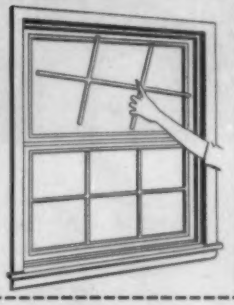

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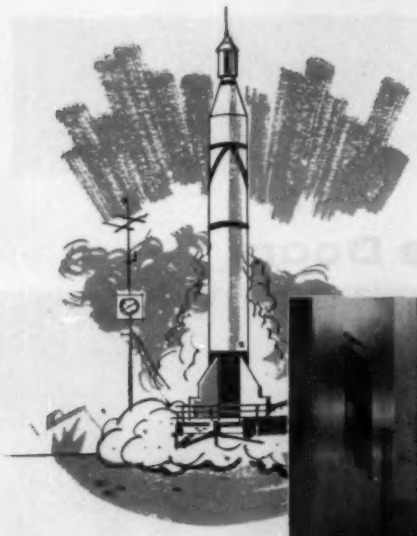

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AWARD WINNER- *1957 Honor Award, Washington Chapter, A.I.A.*

The architect's objective was to provide a pleasant environment within an orderly structure. They felt it important also to provide inside and outside areas where students may congregate without congesting circulation space.

They selected a structural system which would give this school a light feeling and a sharp, clean line. And, in order to admit maximum natural light, they used thin column sections. Steel was ideal for this purpose.

The structural system combines steel and concrete so as to eliminate all pilasters. Tilt-up concrete slabs poured within a steel channel frame form the exterior walls. When welded together and reinforced with steel cover plates the channels form structural columns in solid walls.

Stock wide-flange sections form the window mullions, and longspan joists support the roofs. These open-web joists permit a uniform spread of natural and artificial light on the ceilings, so important in school buildings.

Architect—Waldron & Dietz, Seattle, Wash.

General Contractor:
Hedeen Construction Co.

Structural Engineer:
Stevenson & Rubens

Steel Fabricator and Erector:
Century Metal Works

Structural Shapes:
Bethlehem Pacific Coast Steel Corp.

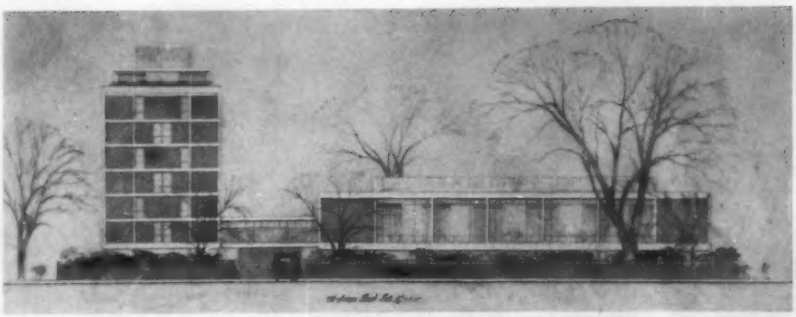
A SIGNIFICANT NEW STRUCTURE . . . FRAMED WITH STEEL

This is the fifth in a series by Bethlehem Steel Company, Bethlehem, Pa.

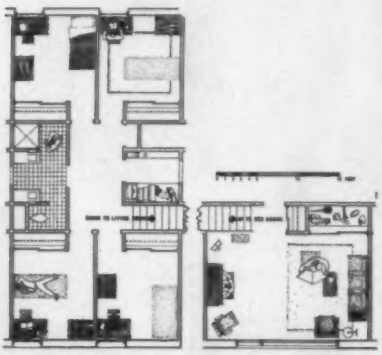
BETHLEHEM STEEL

the new house at half of what it would have been had they attempted to reproduce one of the older houses. Still another advantage is the separation of sleeping and studying areas from the social area in each suite. A bathroom will be included in each suite.

On the ground floor, the house will have faculty offices and apartments for resident tutors. The Master's quarters will be located on the roof, and will include an outdoor terrace for the adults and a play area for the Master's children.



Above: elevation shows seven-story dormitory building at left, commons and dining wing at right. Below: typical arrangement of suites, with bedrooms, bath, hall and storage at left, living room downstairs

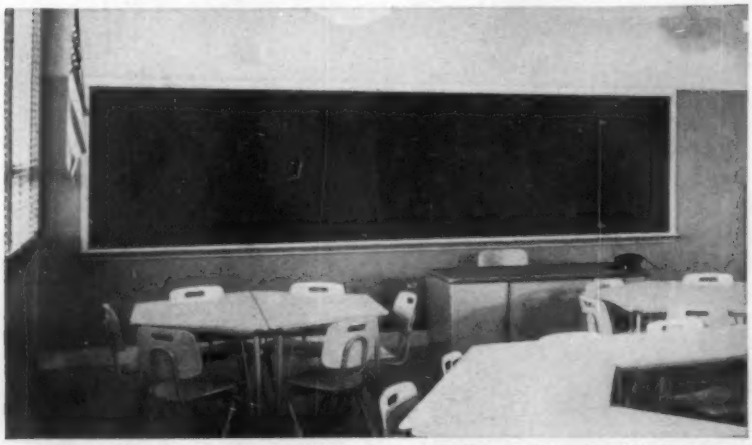


Social and Library Wings

In addition to the main dormitory building, the house will have two wings. One will be a two-story wing containing junior and senior commons rooms, grill room and dining hall; three small dining rooms will be provided for smaller groups, and will double between meals as seminar space. The main dining hall will also double as a theater for house productions, with stage, dressing room and scenery storage space. The other wing will house a 10,000-volume library, with books for reference and for leisure reading.

The new house, which will quarter 360 students, is scheduled to get under construction this spring, and to be opened in the fall of 1959. "Quincy House" will be the first in the college's upperclass house system to be built since the Harvard Houses were completed in 1931. Two more houses are planned.

The program for Harvard College is a major fund-raising effort for the school, aiming at an $82.5 million fund. "Quincy House" will be paid for by some of the first fruits of the campaign, so far totaling $16 million; estimated cost of the hall is $5 million.



West Springfield High School West Springfield, Mass. Arch., Warren H. Ashley West Hartford, Conn.

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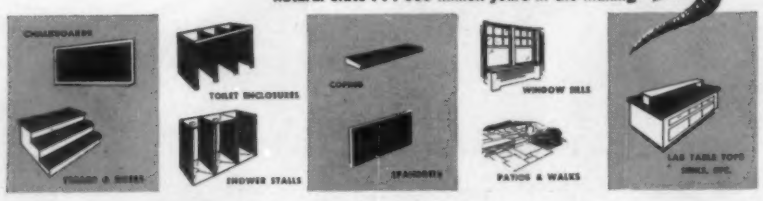

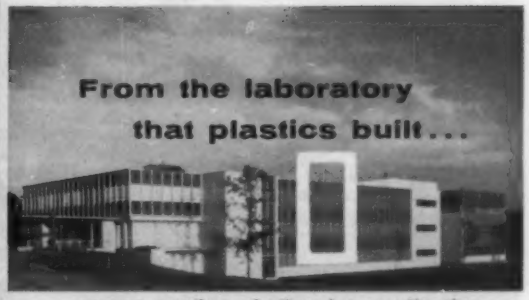

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The practical adaptability of reinforced polyester plastics to architectural design and engineering needs is reflected in the unique curtain wall panels used in Monsanto's new Inorganic Chemicals Division research laboratory. Each 4 x 7-foot panel is an all-plastic laminated sandwich: a 2" styrene foam core jacketed by tough, weather-resistant glass-reinforced polyester skins. Unit weight: only 76 lbs.

Major advantages? Here are a few of the most important:

- *Lightweight panels cut handling, shipping and installation costs—speed construction*
- *Heat loss is practically non-existent because both plastic components are non-conductors*
- *Moisture can't condense within the panel or on the surface . . . "weeping" is no problem here*
- *Insulation, weather-resistance, interior and exterior color are* all *built in . . . costly maintenance problems are eliminated*

These lightweight curtain wall panels demonstrate only one aspect of the design and construction possibilities open to you through the use of versatile polyester laminations and moldings . . . thanks to the tremendous strides being made in polyester resin technology and fabrication techniques. For up-to-date lists of molders and laminators specializing in polyester reinforced applications who can work with you to your own specifications, write:

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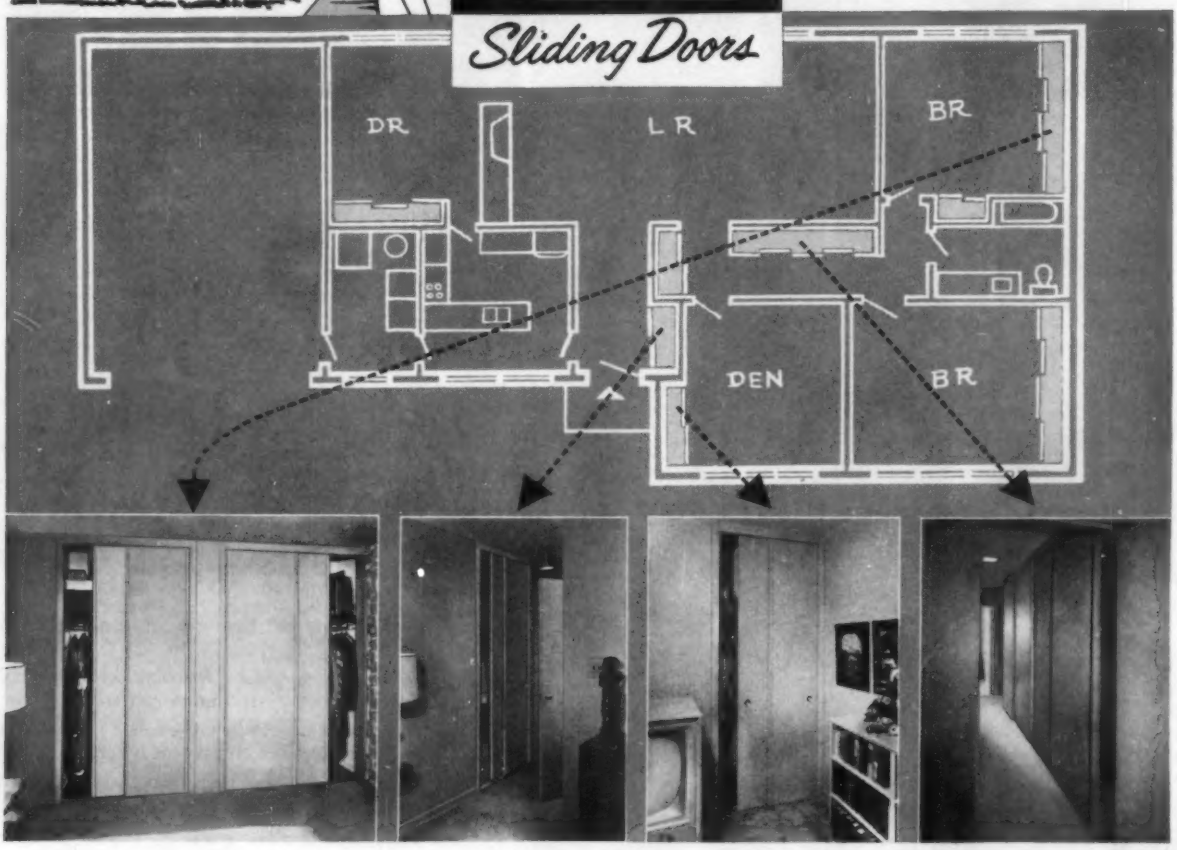

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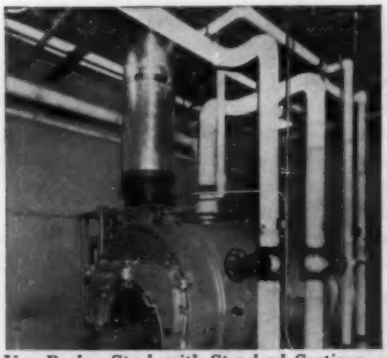
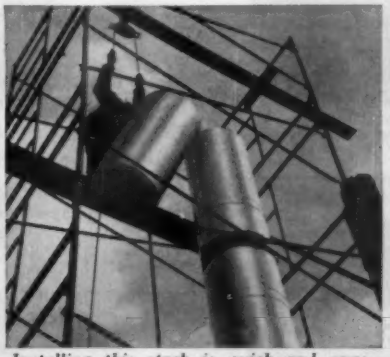
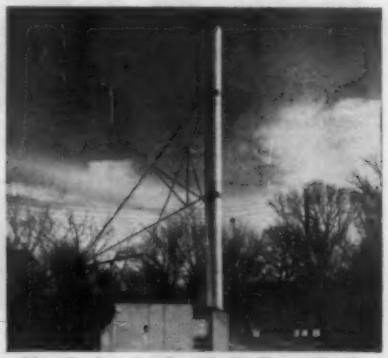


Van-Packer Stack with Standard Sections handles boilers and furnaces efficiently. Can be superimposed or floor supported.



Installing this stack is quick and easy. Three-foot sections are simply cemented atop one another with acidproof cement.



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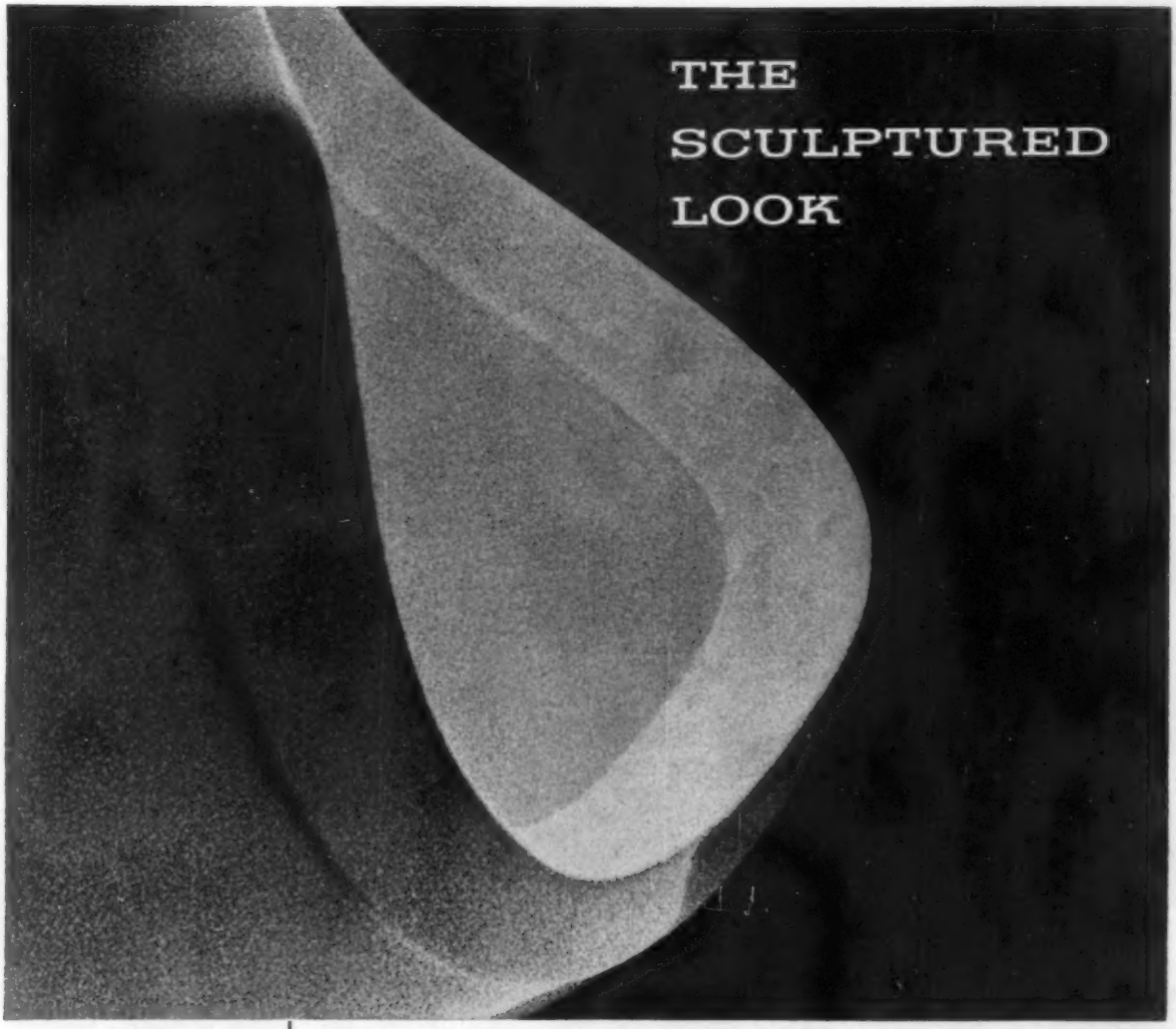

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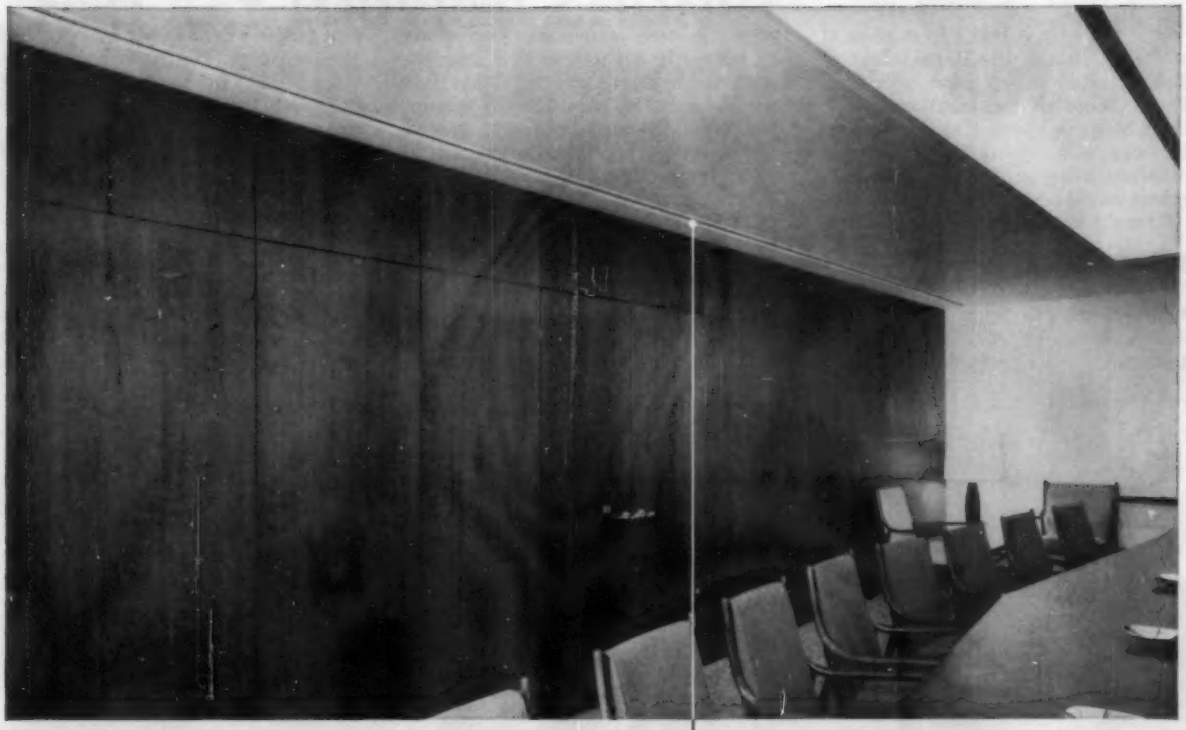

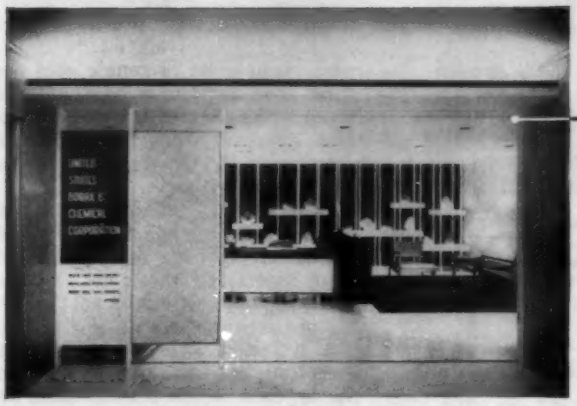

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Type H Stripline shown in above installation

continued from page 32

of Public Roads, the Department of Health, Education, and Welfare, where hospital construction aid is likely to get a boost, and the General Services Administration, with its lease-purchase projects. Other programs would also be affected.

There were other signs of action.

$2 Billion for Post Offices?

The Postmaster General, at the direction of the White House, presented Congress with a plan for modernizing the postal system which would involve expenditure of some $2 billion in a three to five year period. Uncle Sam's share of this cost would be at the rate of $175 million per year, financed by the increased postal rate, and would be used to equip buildings constructed with private funds via the lease-purchase method. The scheme calls for rehabilitating, enlarging, or replacing 2500 government-owned post offices and the replacement or remodeling of 12,000 leased buildings.

In presenting the plan, Postmaster General Summerfield noted that Federal public works funds had not been appropriated for new post offices since 1938. In the intervening 20 years population has increased greatly and the volume of mail handled has jumped 135 per cent.

New Needs Cited

"The physical plant of the Department has not kept pace with the nation's growth," he said. "More than half of the post office space is concentrated in 3300 Federal buildings, all located in key gateway cities. These buildings, built in the late thirties or earlier, some over 50 years old, are mostly monumental in character and completely unsuited for today's mail-handling problems. They are multi-story, with narrow bays, poor lighting, inadequate trucking facilities, and cannot be easily remodeled for mechanization."

CFA Lists 509 Projects

Meanwhile, an indication of the exact shelf of public works planned and ready to go forward is contained in figures from the Community Facilities Administration, an agency of the Housing and Home Finance Agency. Here a plan has long been in existence whereby CFA loans money to states and municipalities for planning their public works with repayment made when the work goes forward. The recipients of the loans, however, must submit their plans for CFA approval when they are completed, even though repayment of the loans does not begin.

As of March 1, CFA said, 262 sets of plans had been completed with advances having been repaid on 40 of these indicating those 40 jobs had started. Total estimated cost of the 262 projects was placed at $290 million. A sum of $4.2 million had been loaned out for their preparation. For the 40 loans repaid, an estimated $40 million worth of construction was involved.

These are part of a total number of plans in the program reaching 509. In other words, CFA has approved planning advances on 509 jobs, loaning $11.7 million for the preparation of plans and specifications. The estimated cost of construction involved in all 509 projects is $667 million.

There are another 140 applications pending which would require $5.6 million in advances, and represent $509 million in construction cost.

CFA also administers a straight loan program for the construction of public works which at the end of January involved 111 approvals for a total fund of $23,567,000. An additional 117 applications were under review representing $33,196,000 in loans.

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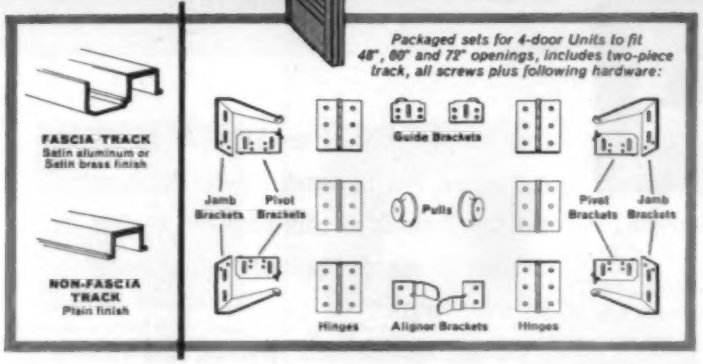

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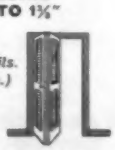

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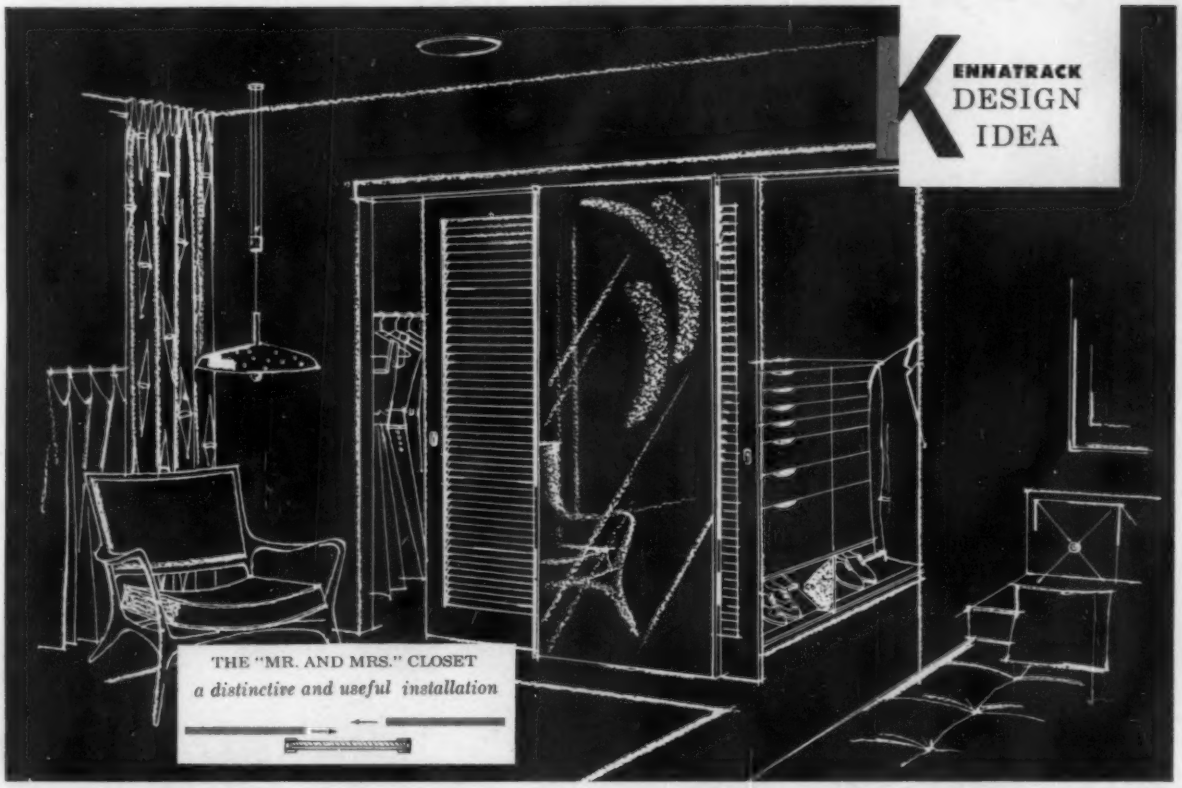

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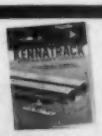

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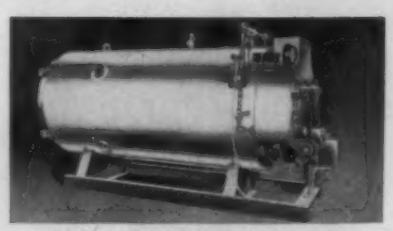

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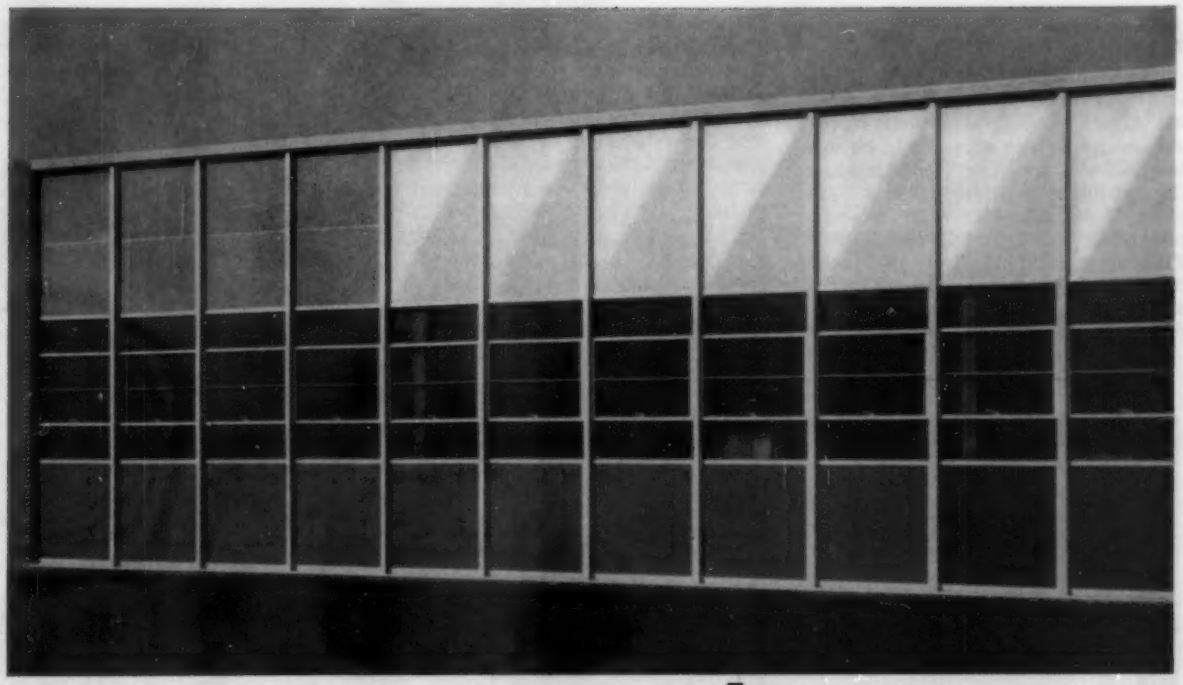
Photo of installation in Brody Hall, M.S.U.



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about Erie Porcelain Enamel Curtain Wall Panels

ERIE PRODUCTS YOU CAN USE

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1¼" thick, mechanically-assembled Curtain Wall Panel. Porcelain Enamel face, galvanized steel back with 1" fibre glass insulation. Modifications to fit special conditions.

U-16

2" to 4" thick, mechanically-assembled Curtain Wall Panel. Porcelain Enamel face, galvanized steel back. Insulating concrete face fill plus fibre glass insulation.

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Porcelain Enamel flanged panels arranged for attachment to furring strips or frame construction—new or existing structures.

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Porcelain Enameling industrial products or components with special formulas to resist acids, abrasion, etc.

This isn't just another wall but an all-out Test Wall containing Erie insulated curtain wall panels of all types—with different types of Porcelain Enamel finishes—different face surfaces—different caulking compounds and gaskets—different installation methods and attachments.

Here, under actual service conditions, the effects of heat, cold, weather, age, physical use and abuse are measured and recorded. Analyses of these data tell the story of Erie's top quality and show where improvements can be made.

When you select Porcelain Enamel Curtain Wall Panels, select the brand that has a quality heritage of 35 years—ERIE.

Erie

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Administration Housing Bill Focuses on Urban Renewal

The Administration's 1958 housing bill, which Housing Administrator Albert M. Cole said would "provide an important stimulus to an upturn in the economy," calls among its important provisions for a five-year $1,350,000,000 urban renewal program, with gradually decreasing Federal participation; a $150 million program of loan guarantees to encourage rehabilitation of nonresidential areas; an increase in the FHA mortgage insurance maximum from $20,000 to $30,000 for single-family houses and some other categories; and authority for FHA to insure privately-financed rental projects for relocation of families displaced by urban renewal, highway construction or other governmental action.

The new urban renewal gimmick in the Administration's housing bill for 1958 could spark a vast amount of downtown redevelopment in American cities.

The provision calls for a system of refunding loans under which the Housing and Home Finance Agency, through its commitments to projects of this type, would back private loans made on a 10-year basis. In effect, the government would promise to pay the debt service requirement if the borrowing agency defaulted.

Officials say there is a need for financial assistance of this type to reach many "skid row" areas in the heart of the nation's cities that cannot qualify under the present housing law because of the "predominantly residential" requirement. Under the Administration's proposal there would be no such restriction.

Many more such areas would be renewed if the funds were readily available, HHFA said.

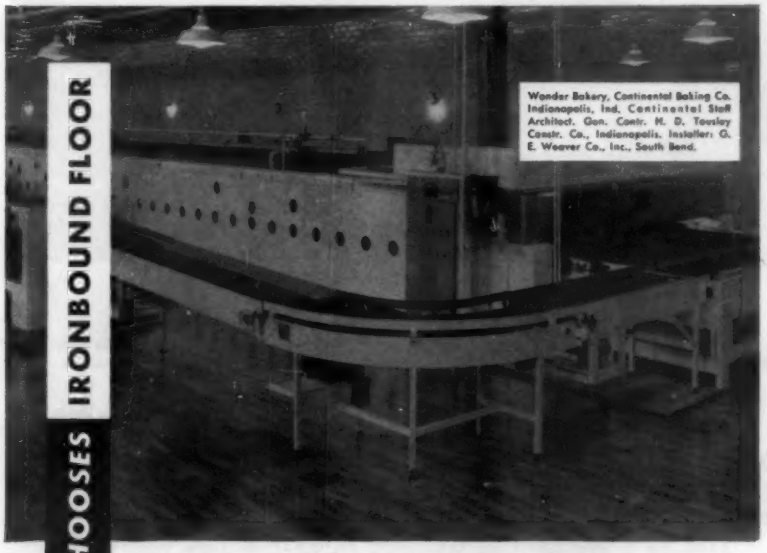
The proposal is admittedly a relatively small effort to test the scheme. Should it prove popular with local agencies—as many observers feel it will—an attempt to expand the authority would follow.

An analysis of the measure states that under Sec. 305 covering these loans without grants for nonresidential area developments, "local public agencies would be authorized to borrow funds from private sources by pledging certain of their rights under their loan contracts with the government." In this framework, it would be unnecessary for the local agencies to actually borrow Federal money, yet, Uncle Sam would be backing their private loans in case of default.

The plan is thought to be workable because of the nature of the property that would be affected. Downtown areas redeveloped for commercial and industrial use would provide relatively higher tax revenues making loan repayments easier and obviating the necessity for a Federal government grant. In this conversion of temporary construction loans into the more permanent 10-year financing with Federal backing, communities are expected to find a less painful method of attacking downtown blight.

The refunding loans could be made for a period up to 10 years and in an amount not exceeding the net cost of the project involved.

The analysis continued: "Undoubtedly, the redevelopment of these areas for commerical or industrial uses is often essential to the surrounding residential areas and to the financial soundness of the municipalities as a whole. The weakening of the tax bases of cities caused by the declining character of central areas of cities has led to a rapid increase in pressure for assistance to


Wonder Bakery, Continental Baking Co. Indianapolis, Ind. Continental Staff Architect. Gen. Contr. H. D. Tousley Constr. Co., Indianapolis. Installer: G. E. Weaver Co., Inc., South Bend.

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for comfort, cleanliness, economy

Continental Baking Co. chooses Ironbound* Continuous Strip* Maple Floor for many of its baking plants from coast to coast because Ironbound solves the baker's floor problems so much easier than any other type of floor. It's easy on the feet — to assure real worker comfort. It's easy to clean, doesn't splinter, crack or create dust — to meet Continental's high standards of cleanliness. And its smooth natural beauty, tight grain and uniform resiliency last much longer than ordinary floors— to provide unmatched long run economy.

These important benefits are achieved by selecting finest strips of Northern hard maple, laying them in mastic and interlocking each strip with sawtooth steel splines. And, too, every Ironbound floor is installed by highly trained, experienced flooring men.

For even greater long run economy, Ironbound flooring is now available vacuum treated with Woodlife preservative by the Dri-Vac process. This means extra protection against termites, vermin and fungi attack as well as moisture absorption, swelling, shrinking and grain raising.

These advantages of Ironbound make it "first choice" of bakers — and they're the same reasons why it's specified for some of the nation's finest gymnasiums, classrooms, auditoriums and industrial plants. For full details, write Robbins Flooring Co., Reed City, Michigan, Dept. AR-458.

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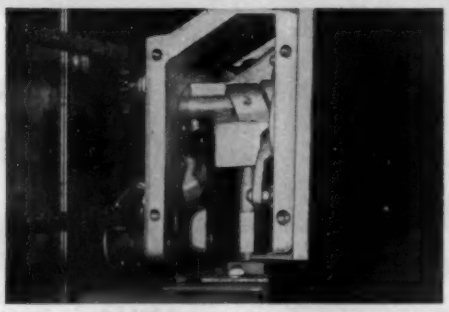
New Jamison *Electroglide** Power Door speeds traffic, saves refrigeration *automatically!*

Electroglide offers famous Jamison Cold Storage Door quality and performance plus a completely new design for power operation. Both bi-parting and single leaf Electroglides are available to meet all job requirements.



EXCLUSIVE CAMLOK COMPRESSION SEAL—Jamison Camlok cams doors "in" against frame and "down" against floor at all points.

These other exclusive features mean dependable, smooth operation.

SHOCK ABSORBER CHAIN LINK—reduces wear and tear

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IMPROVED SAFETY EDGE—sensitive full height and full travel of door

SEALED-IN-OIL REDUCTION GEAR—trouble-free operation, minimum maintenance

High volume traffic can now speed on its way in busy cooler and freezer operations with minimum loss of refrigeration. Electroglide is specifically designed to accelerate truck movement with its instant automatic opening and closing.

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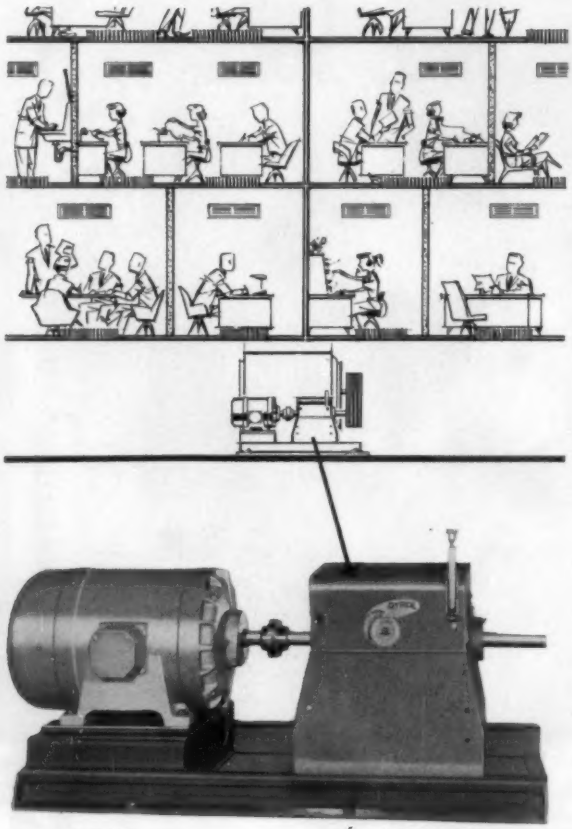

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Used with a constant speed motor, an American Blower adjustable speed Gýrol Fluid Drive reduces fan speed to match demand. Reduced speeds result in reduced noise levels.

Stable control over the entire operating range is readily obtainable with Fluid Drive on single or parallel fan installations.

Bonus: Adjustable speed results in reduced power consumption. All of these benefits can often be obtained with little or no increase in initial cost.

For full information on Type VS, Class 2 Gýrol Fluid Drives (shown), 1 to 800 hp, contact one of our 73 branch offices, or write: American-Standard,* American Blower Division, Detroit 32, Michigan. In Canada: Canadian Sirocco products, Windsor, Ont.

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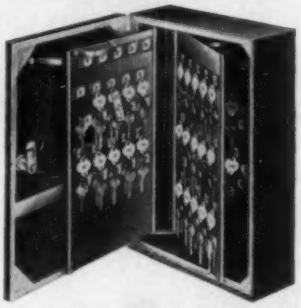

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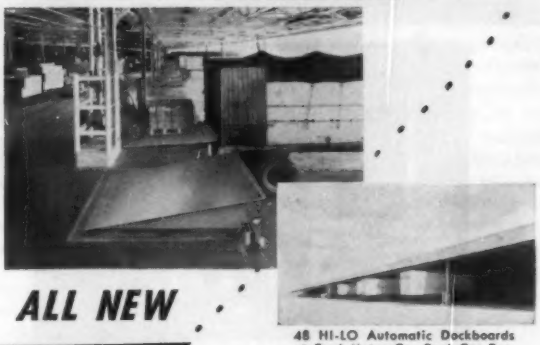

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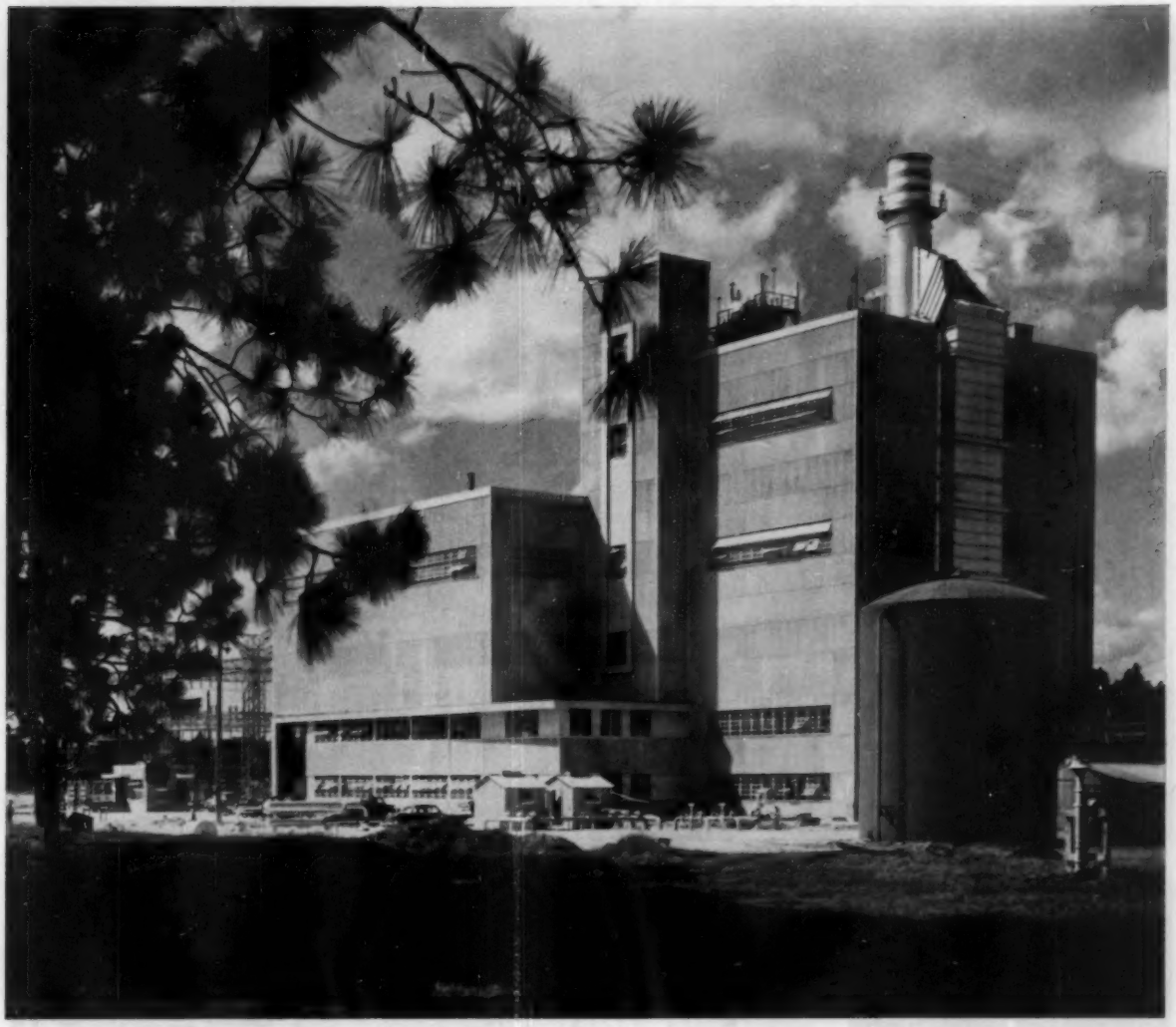


Gold Bond Corrugated ASBESTONE "400" solves salt air problem of Mississippi Power Company

This new $14,000,000 generating plant of the Mississippi Power Company, located in the growing Biloxi-Gulfport area, supplies 100,000 horsepower through an inter-connected system to southeast Mississippi. Built with an eye to the future, the exterior walls of the plant were sided with 53,000 square feet of Gold Bond Corrugated ASBESTONE "400". And with an eye to greater architectural beauty, Gold Bond PERMABOARD Flat Sheets were used for exterior trim. These walls shrug off the corrosive effects of salt air and assure lowest possible maintenance costs in the future.

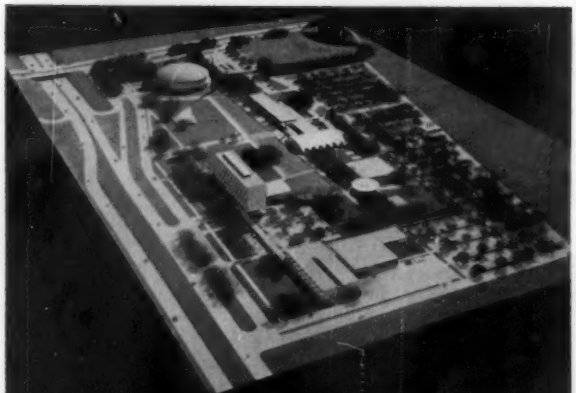
A second unit using both Gold Bond® Corrugated ASBESTONE "400" and PERMABOARD Flat Sheets is now under construction on the same site.

If the walls and roofs you design must resist sea air, chemical fumes, rot or fire, consider ASBESTONE "400" and PERMABOARD. Their first cost is low, they go up fast, and offer freedom of design plus the permanence of stone.

For new bulletins describing both these products—and suggesting how they can go to work in the buildings you design—write Dept. AR-48, National Gypsum Company, Buffalo 2, New York.

Gold Bond
BUILDING PRODUCTS

NATIONAL GYPSUM COMPANY



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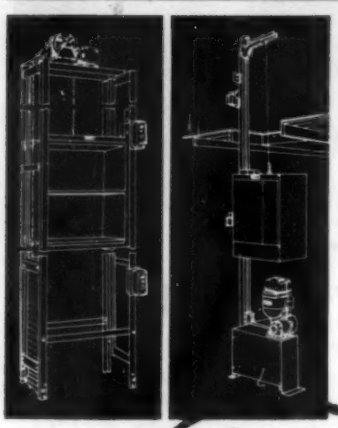

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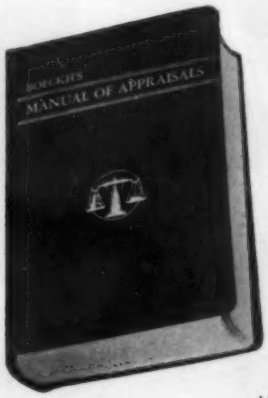

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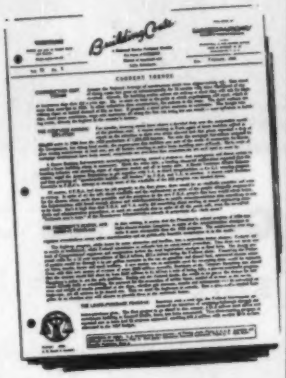

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Gives You Unusually Quiet Flooring . . . In Rugged Vinyl Plastic

One of America's leading manufacturers of built-in electrical equipment for the home—Nutone Incorporated, Cincinnati, —wanted the very finest resilient tile available for their new conference room floor. Their specifications called for a floor that would be lastingly beautiful . . . thoroughly dignified . . . soothingly quiet underfoot. Gold Seal Nairon Custom plastic tile was the perfect answer.

Nairon Custom delights everyone from building superintendents to housewives. This full-thick homogeneous vinyl plastic tile absolutely defies grease, grime and heavy traffic. Neither strong cleaners nor soap and water will dim its luster. So maintenance—in home or office—is easy and inexpensive. Tile dimensions are accurately controlled by annealing . . . preventing unsightly seams. And you have your choice of 49 colors in three distinctive patterns. "Sequin," shown above, is one of them.

Next time you need a really rugged floor—yet one that's quiet enough for a hospital—be sure you see Gold Seal Nairon Custom plastic tile. We think you'll agree it's one of the finest floors you can specify . . . typical of the complete† Gold Seal line.

SPECIFICATIONS: Nairon Custom Plastic Tile—9″x9″, 12″x12″, and 18″ x 18″ tile, 1/8″ or .080″ gauges—3 patterns, Venetian*, Sequin®, "Marble"—total of 49 colors. May be installed over, on, above or below-grade concrete floor or over suspended wood underfloors. May also be installed on walls . . . according to specifications.

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these commercial or industrial areas. The preservation of values in downtown commercial and shopping areas would often go a long way toward strengthening the city's tax base."

Another part of the measure pointed toward a speedup in urban renewal activity is that aimed at simplifying initial approval requirements. This would give the housing administrator greater discretion in approving projects and reduce the number of details now required of communities seeking Federal assistance. If Congress votes this provision, urban renewal projects will move to the brick and mortar stage much more rapidly than they do now, HHFA said.

Aside from the new approach to development of blighted downtown areas, the Administration seeks in this bill to put Federal assistance for urban renewal on a six-year basis. The legislation calls for $1350 million in Federal grants-including $50 million previously authorized—for local programs starts through the fiscal year ending June 30, 1964. With this authority, towns and cities could plan their programs with greater confidence.

Under terms of the pending bill $250 million of this amount would be used in each of the first three years, and $200 million in each of the second three years of the period. This is money for grants only.

Further provisions—

Maximum FHA mortgage insurance on one, two or three family homes would be increased from the present $20,000 for one and two family and $27,000 for three family to $30,000 for all. A similar change is included for cooperative housing, urban renewal sales housing and housing for essential civilian employees at military or research establishments. HHFA explained that in the past two years approximately one fifth of all new homes in metropolitan regions have been in price ranges too high to be financed with FHA-insured mortgages.

The limit on amount of a mortgage for purchase by the Federal National Mortgage Association under its secondary market operations would increase from $15,000 to $20,000 under the proposed bill.

FHA's special Section 221 (100 per cent mortgages for low-cost private housing to relocate families displaced by urban renewal, highway construction, or other governmental action) would be changed so that mortgage limits in high-cost areas would raise from $10,000 to $12,000. Local governing bodies no longer would be required to request formally the use of Section 221 in their communities.

FHA would be authorized to insure mortgages for privately financed rental projects as well as for those financed by public or nonprofit institutions.

In addition to present direct college housing loans, a new program would be established to give aid to colleges and other educational institutions in building student centers and other related facilities as well as housing for schools of nursing. The taxable bonds of educational institutions with income subject to Federal taxation would be guaranteed. It is expected that such debt service guaranty contracts, by assuring private lenders that the debt service will be met as scheduled, will induce them to a more active role in lending for these purposes.

A $200 million increase is provided for indirect college loan authorization. This would boost the total figure from $925 million to $1125 million.

Still other provisions in this Administration measure would extend

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DOORS
CUSTOM-BUILT
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These fine quality doors can be custom-built to desired sizes at competitive prices. They are specified by prominent architects for many well-designed industrial, commercial and institutional buildings. Made with or without Underwriters' Class B, C, D, or E Label. 16 gauge steel construction in either panelled design ("MD") or flush ("FD"). List of recent installations gladly sent to any architect requesting it.
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On many important projects, reinforced concrete and R/C Duct Floor construction is providing better structures for less money, maximum fire safety, and low annual cost. For example, the Managing Director of the Citizens Gas & Coke Utility, of Indianapolis, states, "The use of R/C Duct Floors throughout our new office building has given us complete flexibility of electrical outlets adequate for future as well as current requirements. Our needs were met at a cost considerably less than with other systems—and this was done without sacrifice of our basic requirement—a monolithic concrete structure.

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*Citizens Gas & Coke Utility Building, Indianapolis, Indiana
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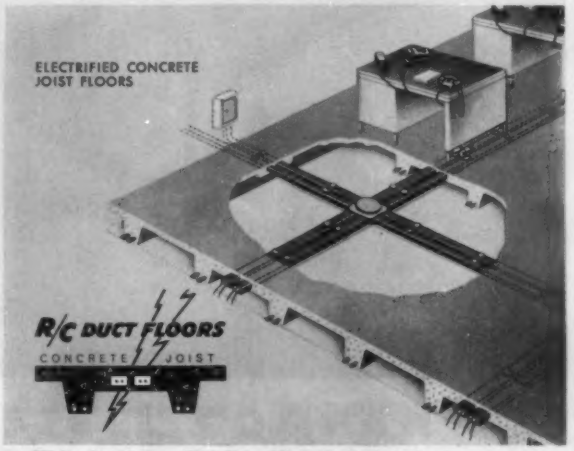
Gen. Contractor: F. A. Wilhelm, Indianapolis



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Century Interplug & Dimmerpak systems can be built, custom fashion, to provide intricate lighting controls easily, economically. These addable units can be combined and installed at minimal cost, can be expanded with additional units as needs or budgets grow. Send for complete data, from Century...the name in lights.

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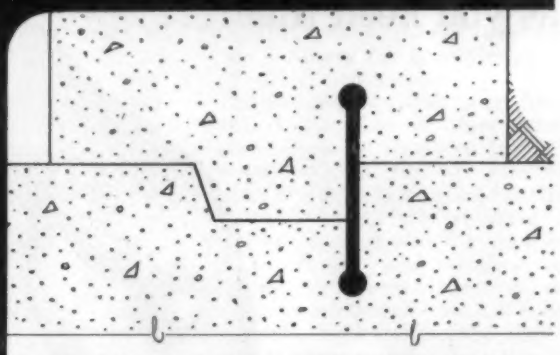

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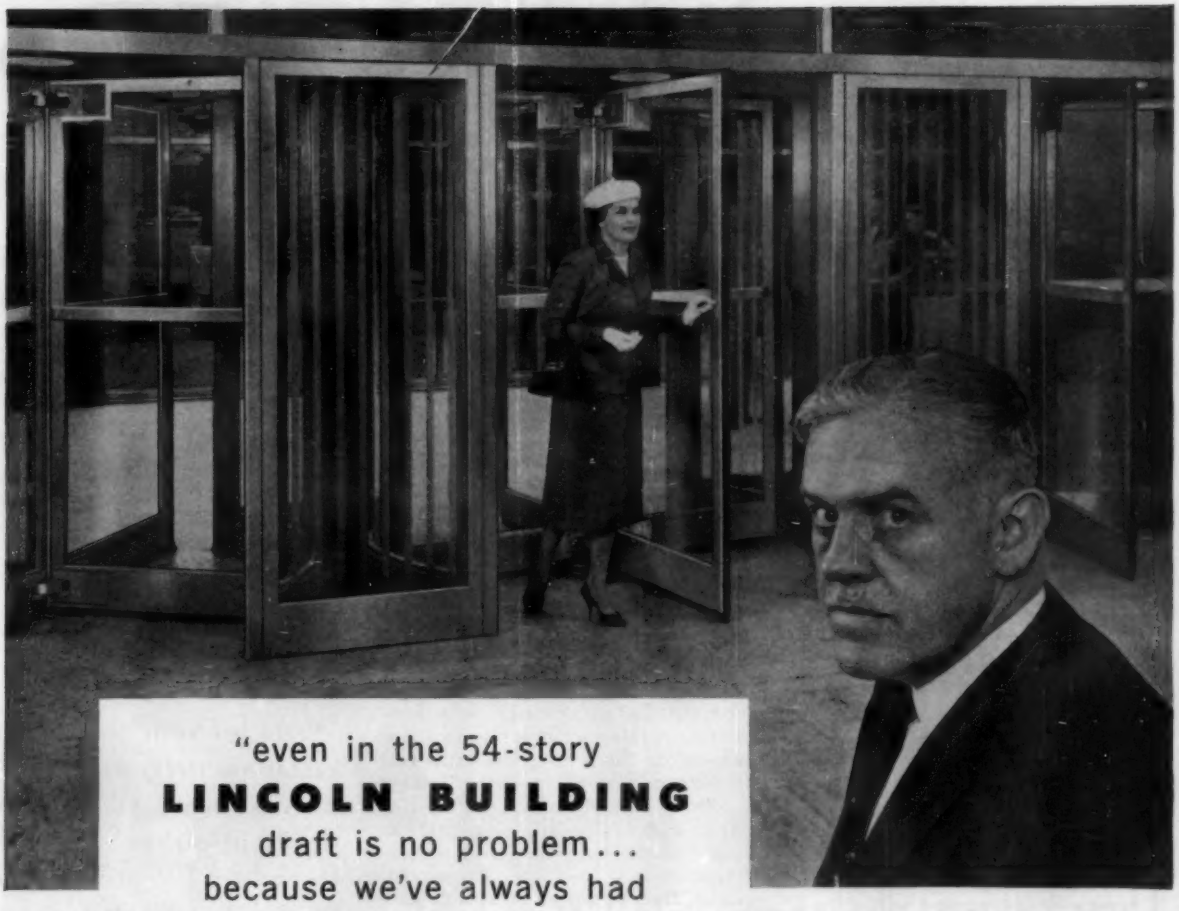

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Washington Topics

authority for the Capehart military housing through fiscal 1960 (present expiration is June, 1959); eliminate discount controls on FHA-insured loans; authorize an added $90 million for FNMA purchase of urban renewal and elderly housing mortgages; permit FHA to increase its outstanding mortgage insurance by $3 billion in any single year for the next five years; and authorize the FHA commissioner to increase the interest rate on Section 207 rental housing and on multi-family and sales-type cooperative housing to 5½ per cent from the present 4½ per cent ceiling.

The Banking committees were expected to start hearings on the legislation by the end of March.

Congressional Group Recommends Public Works Expansion

The Joint Economic Committee of Congress, reporting on the Economic Report of the President for 1958, recommended a quick start on a number of public works programs for "arresting the present decline and promoting economic recovery." This called for outlays to develop the Nation's water resources—navigation, flood control, water and soil conservation and reclamation. These programs, the committee observed, have great merit in the present circumstances, both for the immediate employment opportunities they create and because of their contributions to long-run economic development.

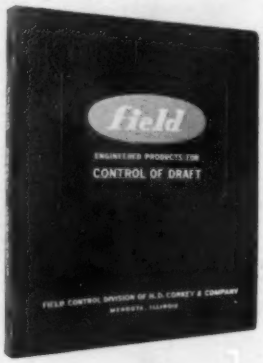
The committee also voiced its opinion that Federal grants should be expanded to accelerate the Federal-aid highway program, urban renewal and public buildings as well as public and private housing activity.

Committee Chairman Wright Patman (D-Tex.) chose a footnote in the report as a means of going on public record against lease-purchase methods of acquiring buildings. He favored direct appropriations subject to the regular budgeting and Congressional appropriations procedures; expenditures for such buildings needed to perform a clearly public function should not, Mr. Patman asserted, be outside the budget and the debt limit ceilings as is substantially the case under the lease-purchase program.

The report continued in this vein: "The Federal, state and local governments, therefore, should promptly activate projects in advanced stages of planning and accelerate those now in progress, especially

field

DRAFT CONTROLS



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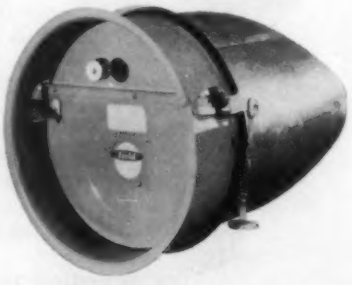

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PREFACE

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   Excavation • Compaction • Earthmoving
3. REINFORCED CONCRETE WORK
   Form fabrication • Form erection • Placing reinforcing steel • Placing concrete • Concrete finishing
4. STRUCTURAL STEEL WORK
   Steel erection with welded, bolted, and riveted connections. Types: Commercial buildings, Mill type buildings, Multi-storied buildings
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APPENDIX
Estimate form sheets for each type of operation

COMPLETE INDEX

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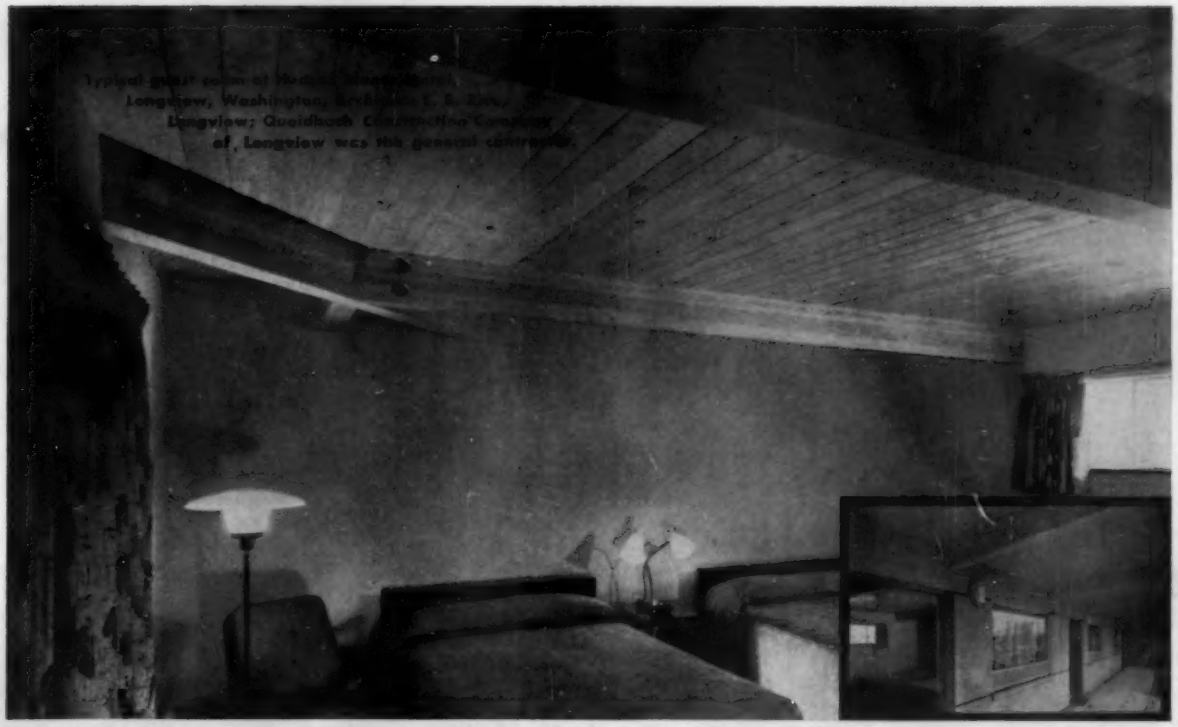

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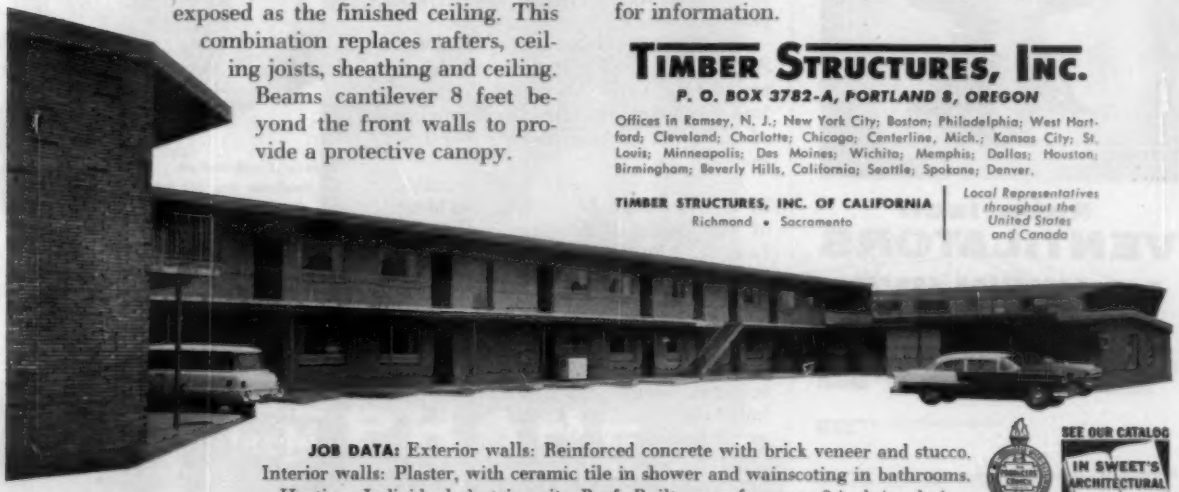

JOB DATA: Exterior walls: Reinforced concrete with brick veneer and stucco. Interior walls: Plaster, with ceramic tile in shower and wainscoting in bathrooms. Heating: Individual electric units. Roof: Built-up surface over 2-inch insulation. Floors: Wall-to-wall carpeting; ceramic tile in bathrooms. Cost per square foot $10.73.

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those which will have a prompt and large effect on economic activity.

"The Federal government should provide the financial assistance required to liberalize and extend unemployment compensation in order to provide quickly a cushion against the decline in income.

"If monetary action, expenditure measures, and other actions, public or private, fall short in stemming recession and promoting recovery, tax reduction will be in order, but such action is not now recommended."

The report said the committee did not expect the lower (but still high) level of plant and equipment expenditures in prospect for 1958 to materially affect the country's economic growth. This statement was qualified with the added clause, "if other types of growth-generating activity take their place."

President Cites Housing Strength, NAHB Wants Easier Credit

Housing received unusually sharp attention when the President pointedly cited the new starts figure for January which indicated an annual rate of more than one million units.

In the unorthodox procedure, Housing Administrator Albert M. Cole had written Mr. Eisenhower calling attention to the January figures and stating that new Federal Housing Administration applications for loan insurance also were gratifying. An increase in number of applications was indicated for mortgage insurance on new and existing properties, large-scale rental and cooperative projects. The FHA found it necessary to add some 100 persons to its staff to handle the heavier application load.

In this atmosphere the National Association of Home Builders pressed for extension of the GI home loan program and for the lowering of FHA's downpayment requirements.

An optimistic note was sounded by W. Franklin Morrison, president of the National Savings and Loan League, who said on the occasion of that group's national legislative conference—"Home building and home lending are off to a good start this year. The forward movement of the housing industry that has developed in recent weeks will intensify in the immediate months ahead providing an increasing number of jobs."

On February 27, Senator John J. Sparkman (D-Ala.), chairman of the Senate housing subcommittee, introduced what he called an emergency

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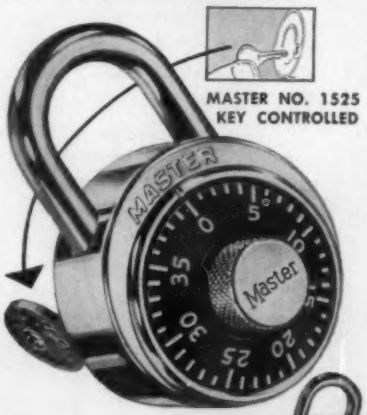

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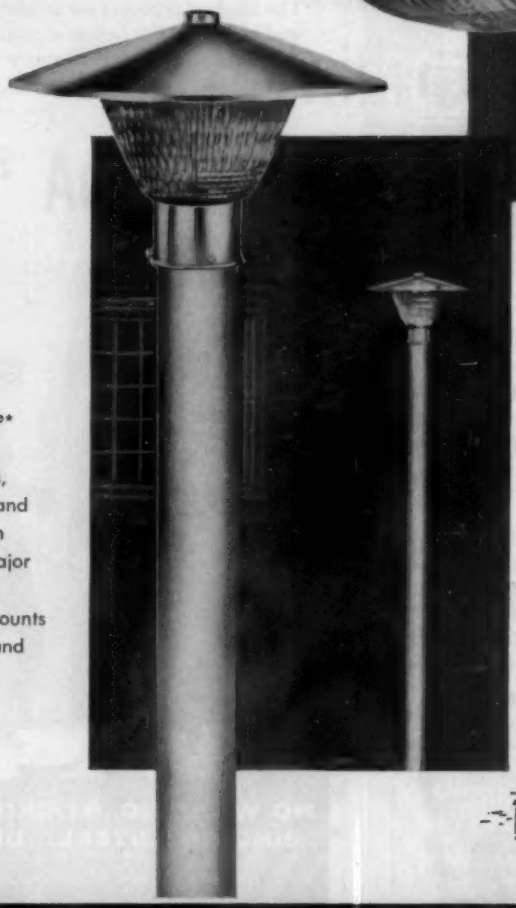

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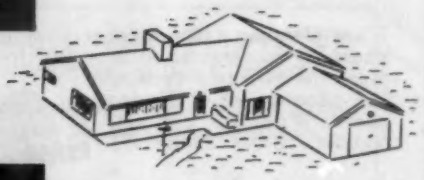

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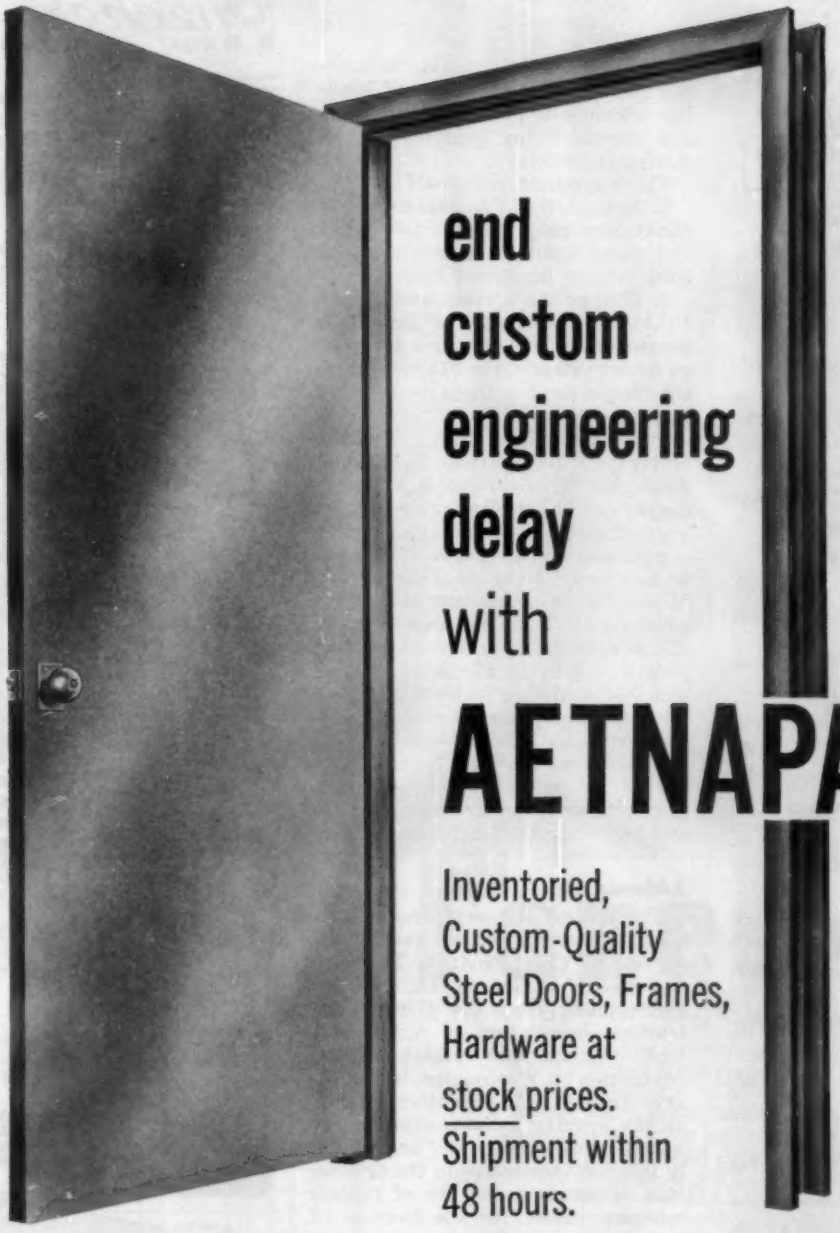

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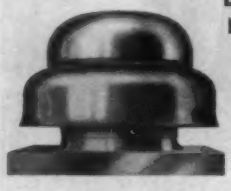

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Washington Topics

housing bill which would "encourage the actual construction of housing which will put people to work and provide living quarters with a minimum of delay."

The Sparkman bill would—

1. Extend the VA guaranty and direct loan programs for two years and make available a minimum of $300 million for direct loans.

2. Change the current schedule of FHA downpayments to permit a downpayment of only three per cent on homes valued up to $13,000 (present requirement is three per cent up to $10,000).

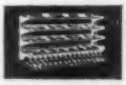
3. Give to the Federal National Mortgage Association additional funds for three categories of mortgages: (a) $1.5 billion for a new category of special assistance mortgages —purchase of mortgages of $13,500 or less would be authorized; (b) $1 billion for the President to use for purchase of "home mortgages generally as a means of retarding or stopping a decline in mortgage lending and homebuilding activities which threatens materially the stability of a high-level national economy," and (c) $100 million for purchase by FNMA of military housing mortgages insured under Sections 803 and 809 of the National Housing Act.

Addenda

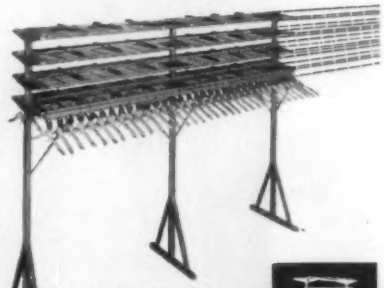
The precast masonry panels developed and announced last fall by the Structural Clay Products Research Foundation at Geneva, Ill., received endorsement from the Mason Contractors Association of America at that organization's eighth annual convention in Washington in February. An M.C.A.A. resolution adopted at the opening session urged every member and chapter to "immediately interest themselves in the production, installation and use of precast masonry panels for the purpose of maintaining masonry's leadership in the construction field." Harold W. Peterson, Chicago, was elected president of the association, succeeding Fred H. Daues of St. Louis.

1957 was a billion-dollar year for the Federal National Mortgage Association. This marked a high point in the agency's four years of secondary mortgage market operations. FNMA reported that last year $1,021,044,000 was invested in 86,597 residential mortgages, loans insured by the Federal Housing Administration or guaranteed by the Veterans Administration.

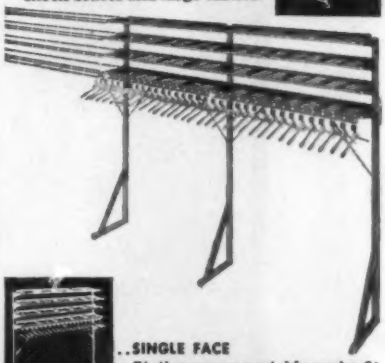
Checker COAT and HAT RACKS



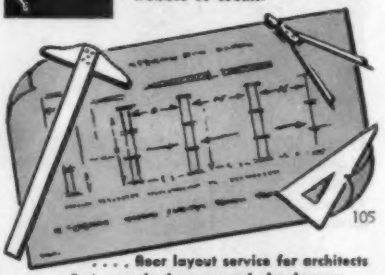
. . . WALL RACKS
Basic 2' 2", 3' 2", 4' 2" and 5' 2" units mount directly on wall. Interlocking add-on sections make racks of longer lengths and greater capacity.



DOUBLE FACED . . . .
These standard cloakroom racks (with or without checks) hold 8 coats and hats per foot of length. Also available in 4' 2" and 5' 2" portable racks—with shock braces and large casters.



. . SINGLE FACE
Stationary or portable racks fit close against wall. Sections snap-lock together to make rigid assembly that will not sag, wobble or creak.



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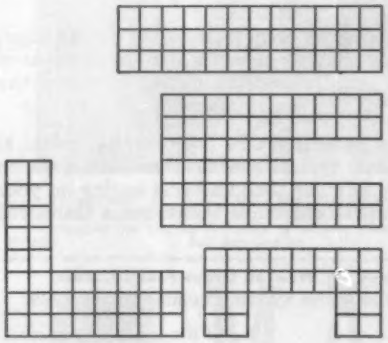

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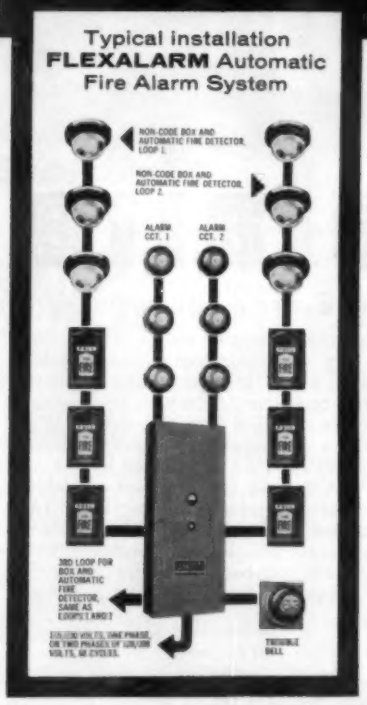
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ALARM CKT. 1
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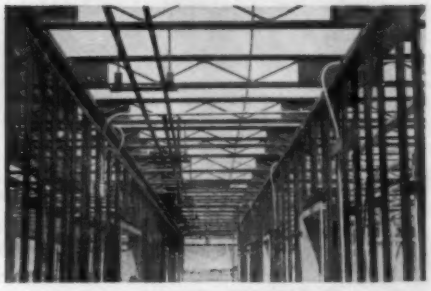

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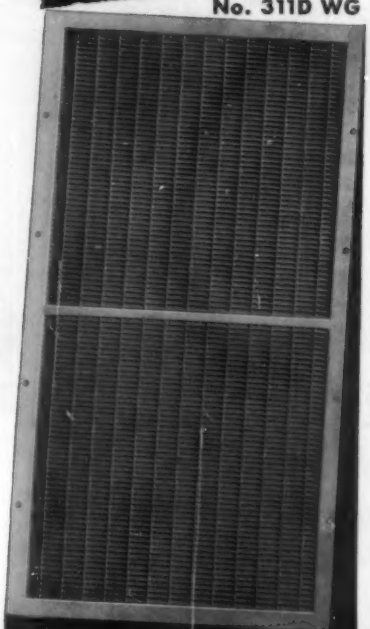

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Required Reading

continued from page 72

church committee. Other valuable features include a remarkable collection of 550 illustrations, mostly photographs of organs and church interiors; appendixes providing dispositions and space requirements of contemporary organs; a list of recordings of various organs; extensive notes; and a comprehensive bibliography and index.

Most important, the author urges the use of the neo-baroque (rather than romantic) or "polyphonic" organ, pioneered here by Walter Holtkamp, and emphasizes the work of such designers as Marcussen, Frobenius, and Flentrop, in Europe. He thus aligns himself with the best contemporary thought on the subject.

If Mr. Blanton's work has the profound influence on church designers that it deserves, he will have rendered great service to the twin arts of music and architecture.

—*Arthur Fisher*

Technical References

Contracts, Specifications,

. . . *And Law for Engineers* by Clarence W. Dunham and Robert D. Young. The authors, respectively an engineer and a lawyer, discuss in detail aspects of the law important to engineers and architects: basic principles of the law of contracts; the application of these principles to construction contracts, including data on specifications; miscellaneous fields of law of special interest to engineers. *McGraw-Hill Book Company, Inc., N. Y.*, 1958. 550 pp., illus. $7.50.

ACI Manual

. . . *Of Concrete Inspection* (fourth edition) is now up to date on mix proportioning and cold- and hot-weather concreting. *American Concrete Institute, P. O. Box 4754, Redford Sta., Detroit 19, Mich.*, 1957. 240 pp., illus. $3.50 ($1.75 to ACI members).

Plastics Study Group

. . . *Of the Building Research Institute.* Papers on "Plastics for Roof Construction" and "A Case Study: Plastics in a New Building" (Monsanto Inorganic Chemicals Lab.). *Building Research Institute, 2101 Constitution Ave., Washington, D.C.*, 1957. 125 pp., illus. $3.00.

The High School

. . . *In a Changing World.* Architects might find this yearbook useful for background and reference. *American Association of School Administrators, 1201 Sixteenth St. N. W., Washington, D. C.*, 1958. 383 pp. $5.00.

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Quality control
Shopwork

As you can see, at least 10 of the above sections contain material which has a direct bearing on design. The processes to take place within the buildings, and the activities of the men who will maintain and be responsible for them should be considered most carefully in the design stage. For that reason, it will be worth your while to examine this giant book.

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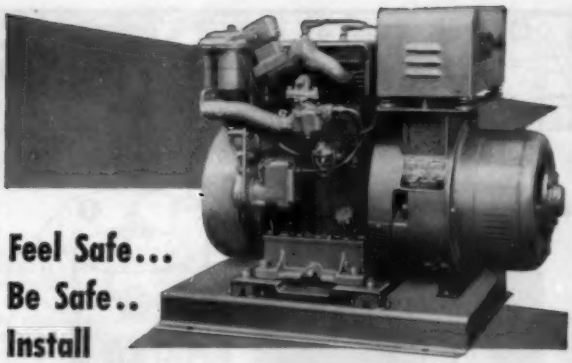

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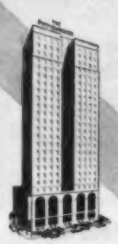

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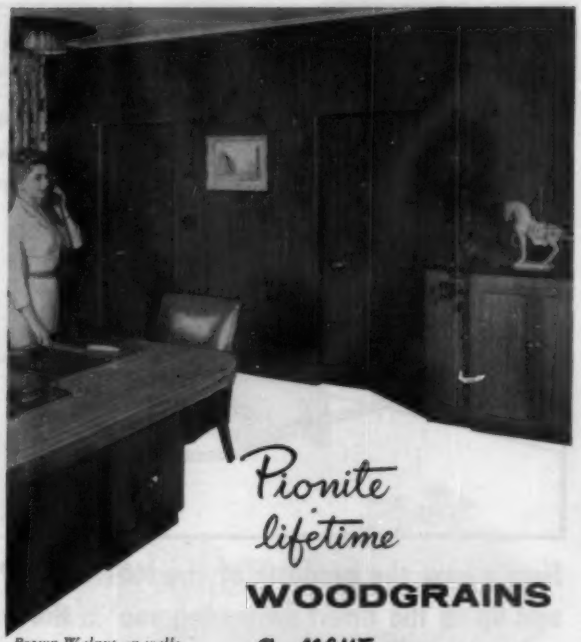

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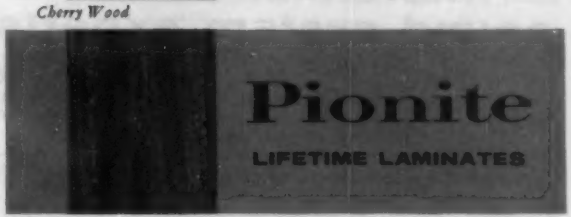

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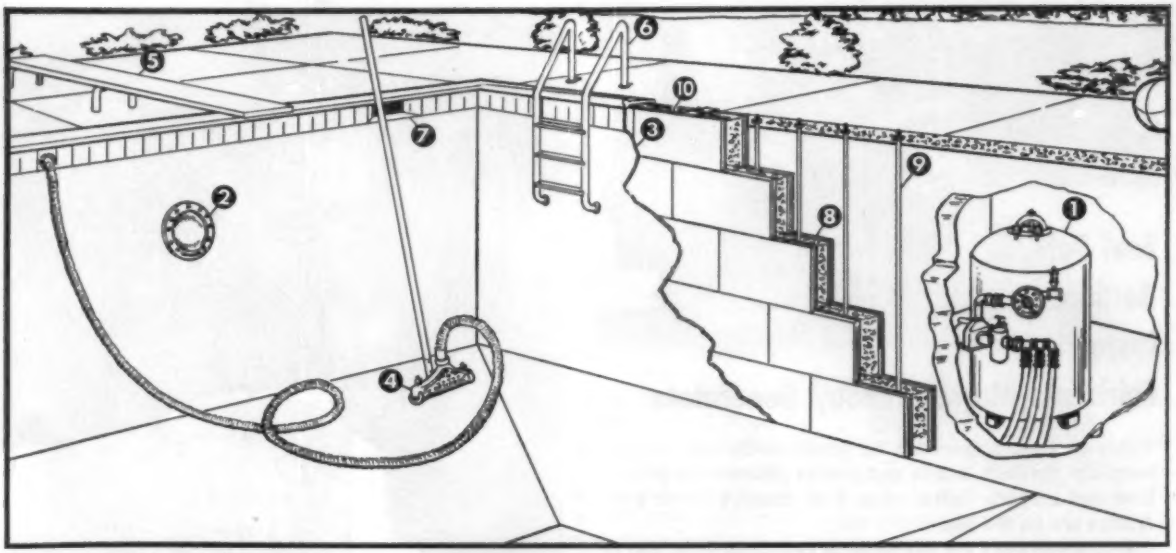

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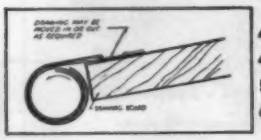

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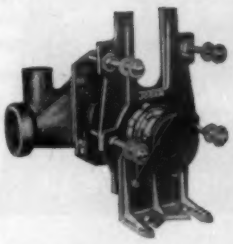

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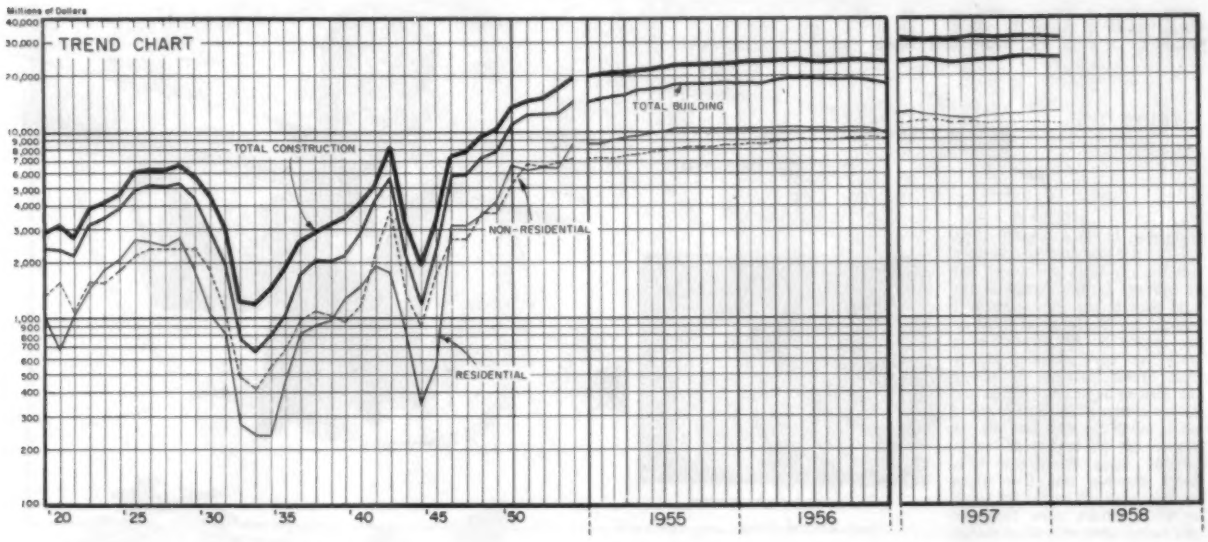
Current Trends in Construction

As Reflected in Contracts for Future Construction in the U.S. Reported and Tabulated by F. W. Dodge Corporation



JANUARY CONTRACTS TOP $2 BILLION, OFF 10 PER CENT

Contracts for future construction in the U. S. reached a total of $2,066,059,000 in January, but this represented a 10 per cent decline from the January 1957 figure and the sharpest decline in more than a year. The decline affected nearly every major category.

The drop was sharpest in the nonresidential field, where the total of $758,771,000 showed a 17 per cent decline from the level of the 1957 month. Within the nonresidential category, manufacturing buildings had the biggest dip, with contracts 53 per cent below January 1957. Commercial and educational building contracts showed declines of six and four per cent respectively.

Residential building contracts for January 1958, at $777,423,000, dropped only five per cent below the 1957 month. Of this decline, the one- and two-family house field accounted for most of the decline and apartment building contracts continued to show strength compared with a year ago. The number of dwelling units represented in the January contracts totaled 64,121, down two per cent.

In the heavy engineering category, contracts totaled $529,865,000, a seven per cent decline from the 1957 month. Although there were substantial gains in utilities contracts, these were more than offset by sharp declines in the public works category, particularly in the Far West.

MOTELS, MOTOR COURTS*

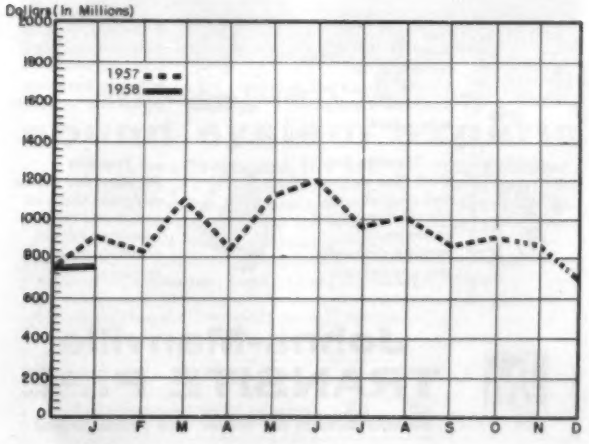
Construction Contracts—48 states

Valuation (in thousands of dollars)

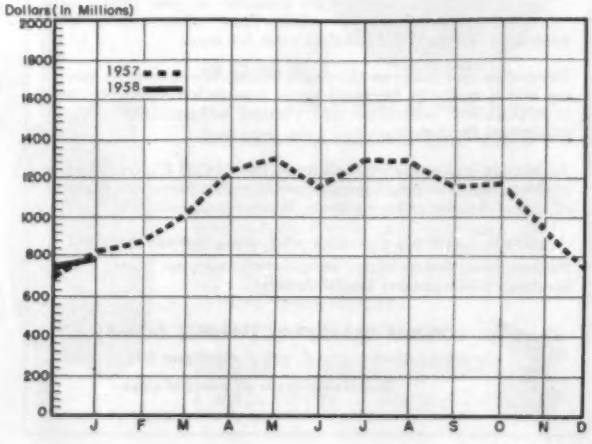
	1956	1957
JAN.	7,188	5,558
FEB.	13,669	8,757
MAR.	14,423	12,061
APR.	12,300	8,438
MAY	20,144	18,564
JUNE	10,238	8,992
JULY	7,625	15,699
AUG.	15,900	16,966
SEPT.	15,139	20,603
OCT.	7,927	17,080
NOV.	13,251	15,910
DEC.	7,758	12,594
TOTALS	145,522	161,222

*Motels are the subject of Building Types Study No. 257 (pages 203-230)

NONRESIDENTIAL BUILDING



RESIDENTIAL BUILDING



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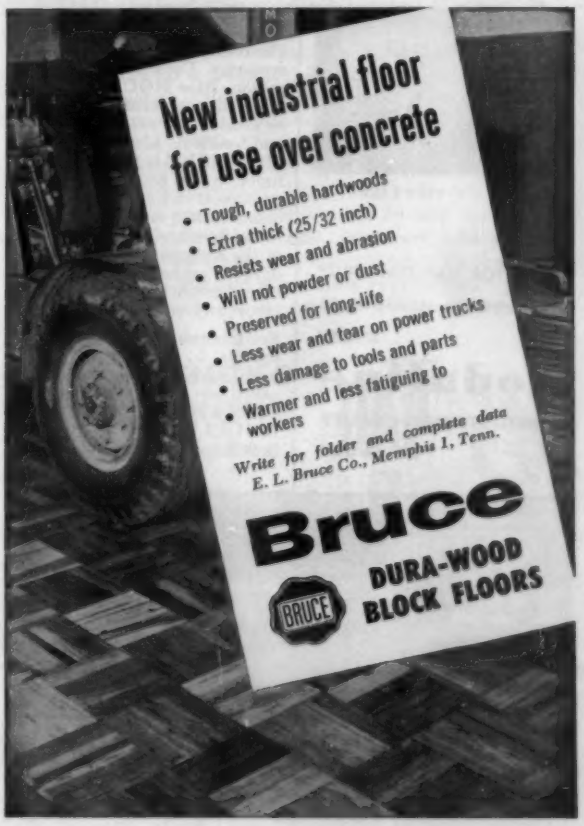
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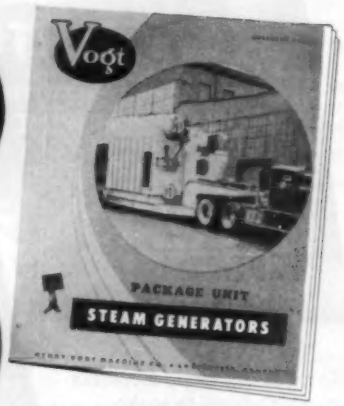

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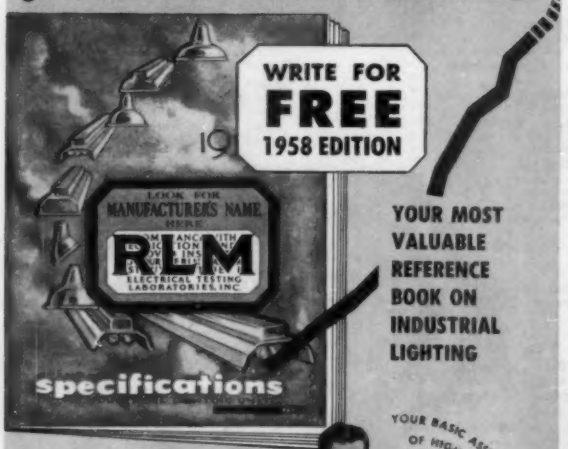

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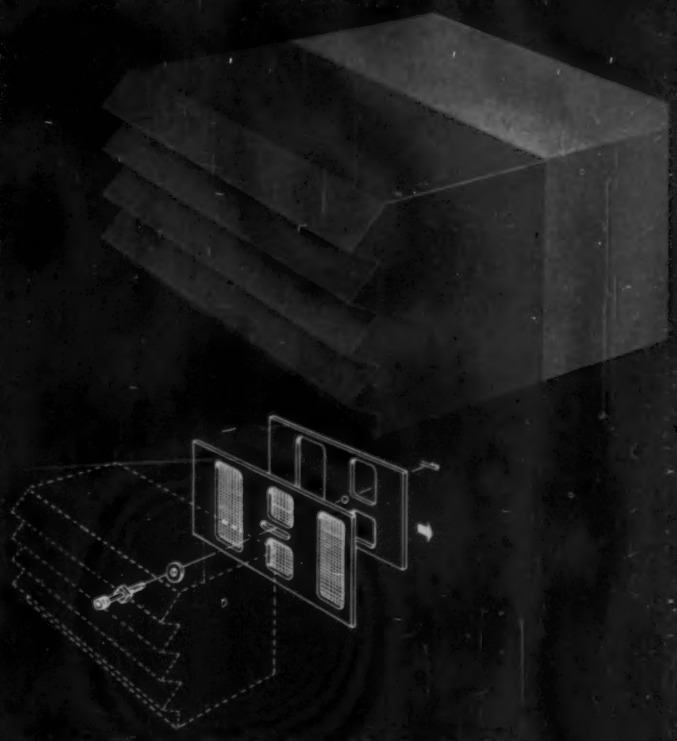

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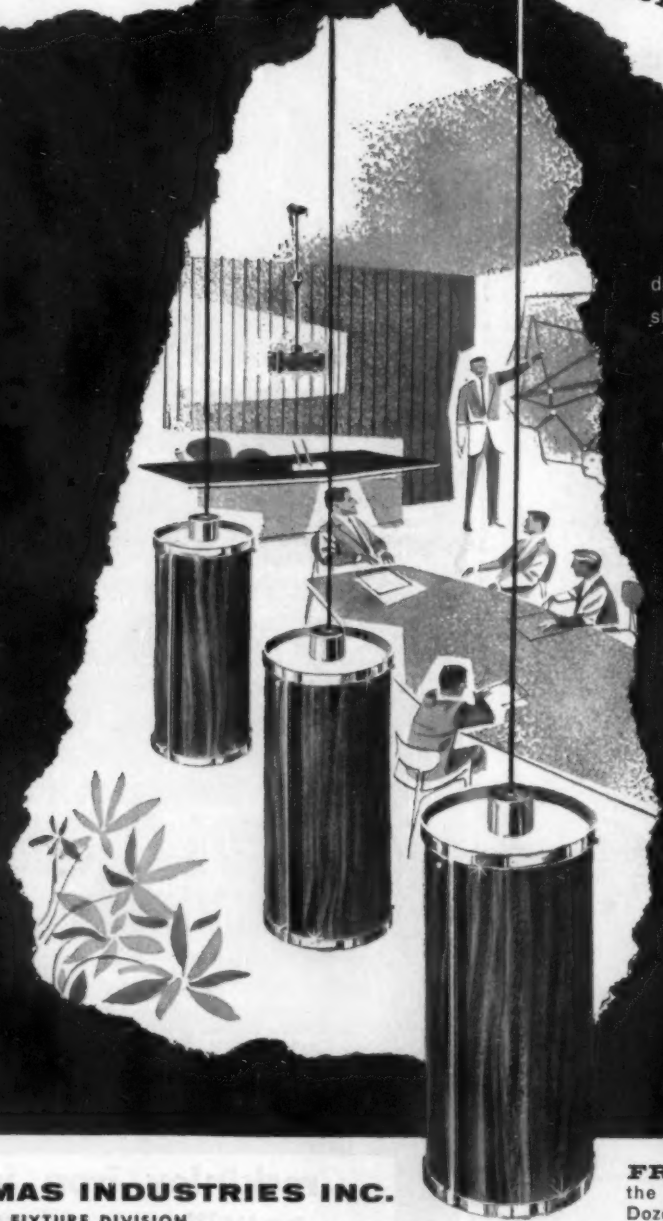

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